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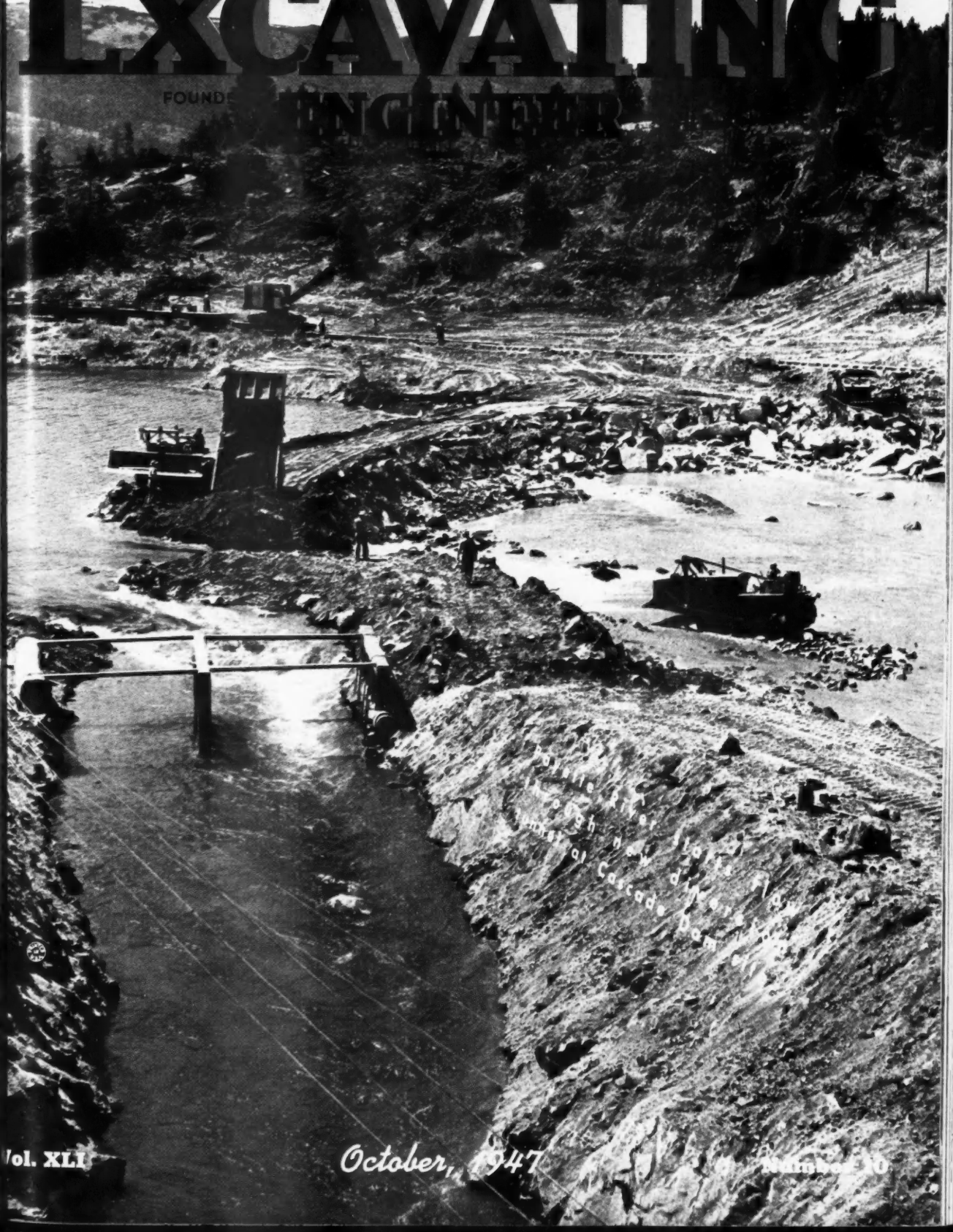

Vol. XLI October, 1947 Number 10

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DRAGSHOVELS

Sewer trenches and basement excavations yield profits with the Bucyrus-Erie 10-B, 15-B and 22-B dragshovels. Fast and effective, they combine a quick hoist and swing with a powerful digging stroke that fills the dipper at every pass, for a rapid overall cycle that eats up work and boosts output.

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Diversion of the entire North Fork of the Payette River through a 310-ft.-long tunnel in one of the abutments of Cascade Dam recently paved the way for placement of 368,000 cu. yds. of material in the embankment. Contractor Morrison-Knudsen Company anticipates completing the structure this month—six months ahead of schedule. This Bureau of Reclamation photo shows bulldozers spreading trucked-in material to form a coffer dam with most of the water already flowing through the inlet channel to the diversion tunnel.

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Restrictions

With RANGE, SPEED, OUTPUT, ECONOMY

ONLY a few years ago many stripping operations now being successfully worked lay undeveloped because conditions imposed prohibitive costs. Extremely deep overburden, necessity for spoiling far from the digging point, hard-to-dig materials, soft footing—these and other factors made the stripping costs excessive.

Today such workings have been converted into profitable mining operations by machines able to perform economically in the face of the extreme conditions. The Bucyrus-Erie 1150-B and 650-B walking draglines are typical of such machines. These long-range units, with booms ranging in length to 250 feet, easily peel off the deep overburden and deposit it well out of the way. Their great strength, capacity and power are more than a match for the toughest stripping service. Their sure-footed walking traction mountings and large area bases permit traveling over and working on ground soft enough to bog other machines down. Their fast action and highly responsive electrical control result in fast overall digging cycles that are easy to maintain for a continued high-production pace.

Design and construction of these outstanding machines are a direct result of Bucyrus-Erie's intensive knowledge of stripping problems and its wide general background of experience in building excavating equipment of all types. For 67 years, Bucyrus-Erie has kept in constant close contact with your excavating problems — has introduced most of the major improvements in excavating equipment. The 1150-B and 650-B walking draglines are new reminders that it pays to look to Bucyrus-Erie for excavating equipment of all sizes that is "years ahead" in range, speed, output, and economy.

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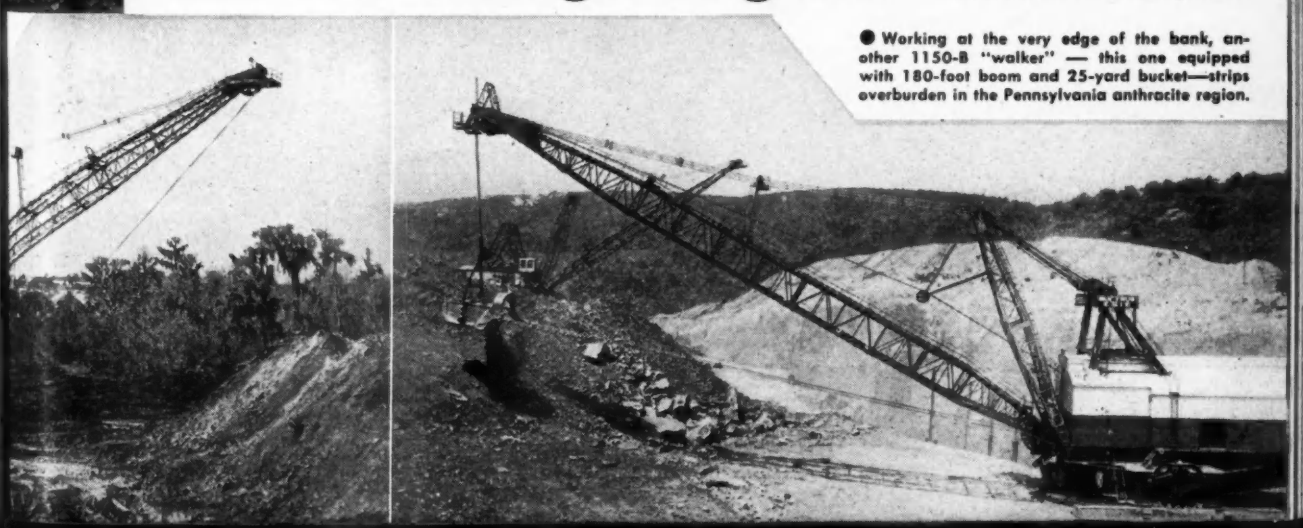
Walking Draglines

Booms to 250 feet; Buckets to 25 cubic yards



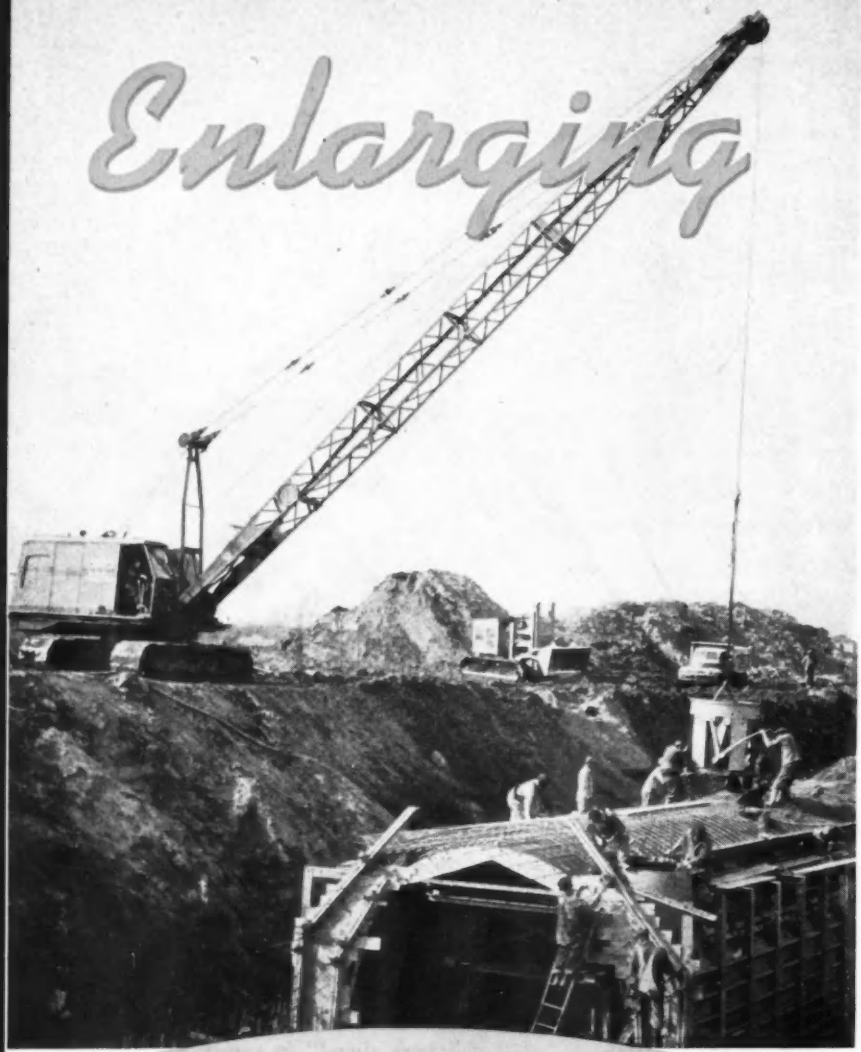
● Working at the very edge of the bank, another 1150-B "walker" — this one equipped with 180-foot boom and 25-yard bucket—strips overburden in the Pennsylvania anthracite region.

Enlarging the Wo
Sewage

Record spring rains plus slow materials deliveries have been major challenges on M. J. Boyle & Company's 5½ million dollar contract to build important new additions to the sewage treatment plant at Stickney, Illinois. About 500,000 yards of excavation is involved.

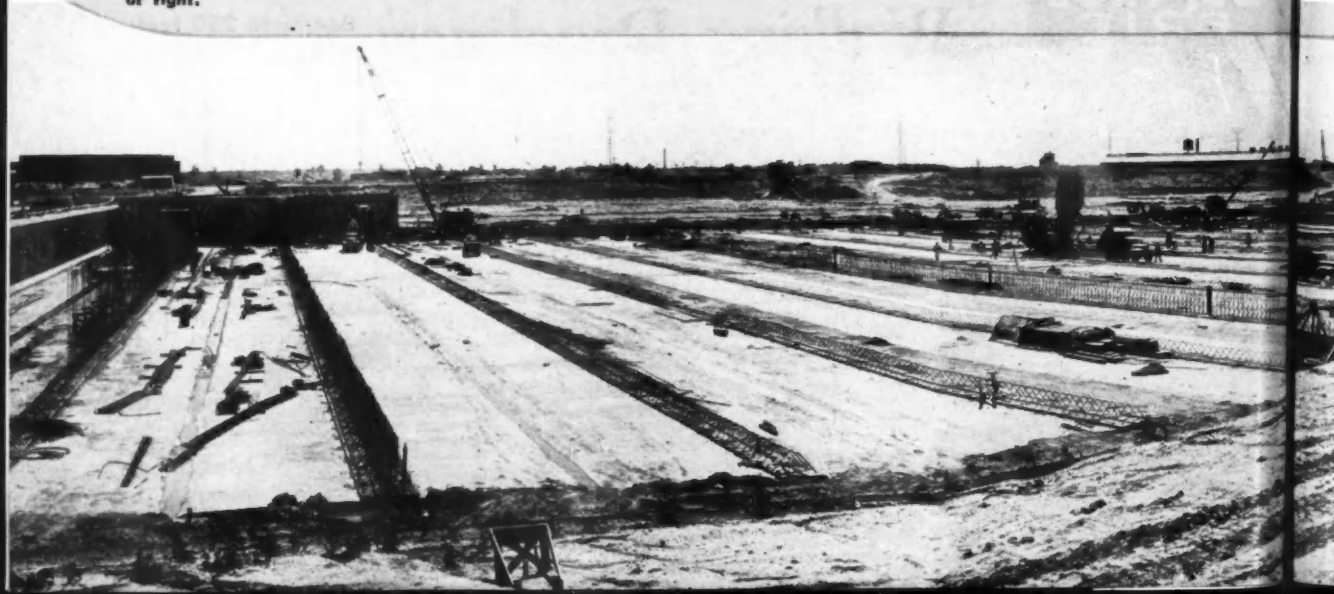
THE world's largest sewage treatment plant—the West-Southwest works of the Sanitary District of Chicago—is growing even larger as construction proceeds on a third battery activated sludge installation at the plant site in suburban Stickney, 10 miles southwest of the Loop district. When the construction is completed, the plant will be capable of processing 750 million gallons of raw sewage daily and of removing three hundred tons of solids in the process.

The new construction consists principally of building a battery of eight aeration tanks and 24



• A Bucyrus-Erie 38-B crane with 80-ft. boom and 1½-yd. Blaw-Knox concrete bucket places concrete for construction of the 4,000-ft. effluent conduit.

• Left background of this panoramic shot of operations at Stickney shows the operating gallery for some of the existing treatment tanks. An effluent opening and gate construction are shown in the center while the northeastern end of the aeration tank construction is shown at right.



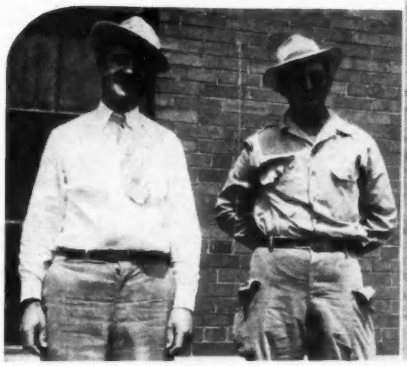
d's Biggest
Treatment Plant

final settling tanks, plus an operating gallery, service tunnel, gate house, and influent and effluent conduits. Excavation for the project, which covers roughly 35 acres, totals about 500,000 pay yards—although the actual yardage is expected to be closer to 600,000.

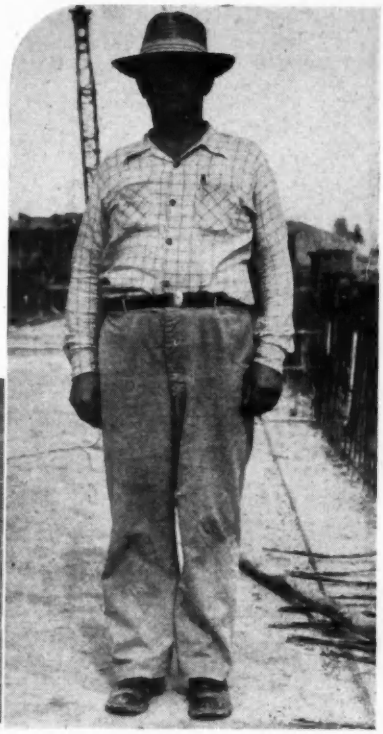
The bulk of this yardage was obtained from the main excavation, which measures 1400 feet east and west, 1100 feet north and south, and is 17½ feet deep at its deepest points. About 74,000 cu. yd. of the total consists of excavation for the 17½-ft. Imhoff effluent conduit—a 4000 ft. long tube being dug to accomodate this concrete conduit.

The prime contract for the new project was awarded to M. J. Boyle and Co., Chicago construction contractors, on a low bid of roughly 5½ million dollars on June 6, 1946. Work was started on July 15th, as dirt moving operations, subcontracted to Thomas M. Madden Co. of Chicago, got underway.

The original expected completion time was at first set for the Spring of 1948, but subsequent abnormally slow deliveries of such critical items as reinforcing steel, concrete forms, and cement, plus the wettest spring in some 40 years produced unavoidable delays, necessitating requests for time extensions. Present plans anticipate completion of the project in the early Fall of 1948.



• H. J. Bartz, Senior Civil Eng. (left) and W. C. Burdick, Asst. Civil Eng., supervise the project for the Chicago Sanitary District.

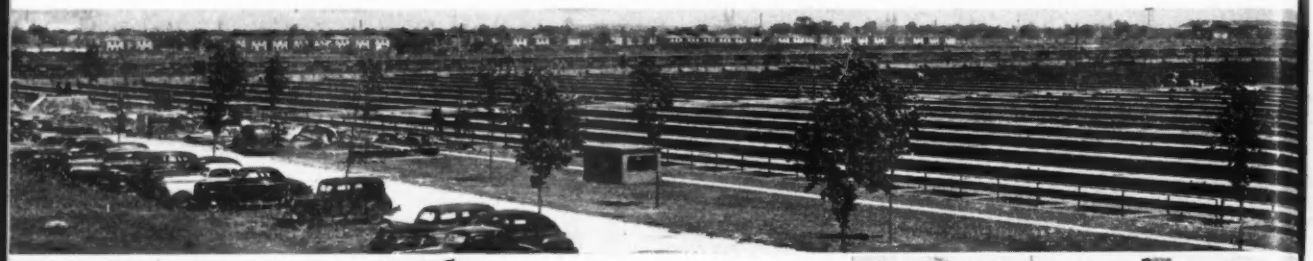


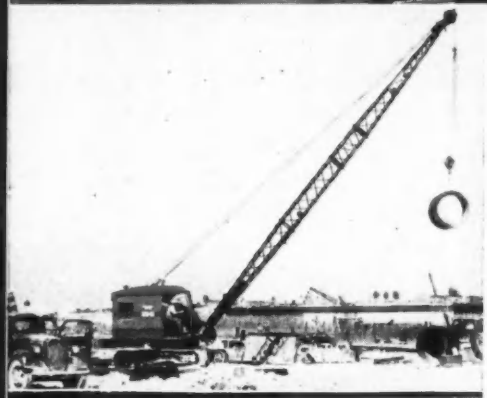
• C. L. Sogge, General Superintendent, is in charge of the project for M. J. Boyle & Co.

The first step in the actual operations on the project consisted of clearing the 1400 ft. by 1100 ft. area in which the processing tanks, operating gallery, and other installations will be located. The grass-covered ground was mowed with power mowers, then grubbed with a Bucyrus-Erie 15-B dragshovel, with obstacles snaked out by a Caterpillar D7 tractor equipped with a Hyster N7 winch.

The black topsoil, totalling

• Much of the excavating and grading for the main pit was handled by scrapers like the 12-cu. yd. LeTourneau in the foreground.

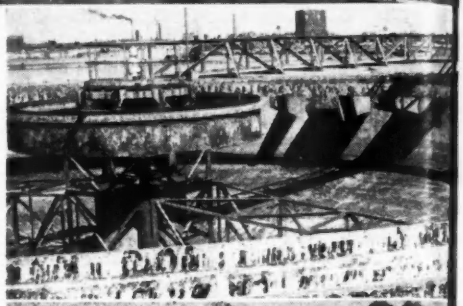


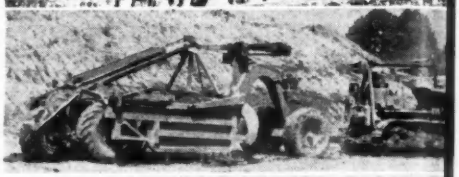


• Above: Seeing this line-up of aeration tanks makes it easy to understand why the Stickney plant is the largest in the world.

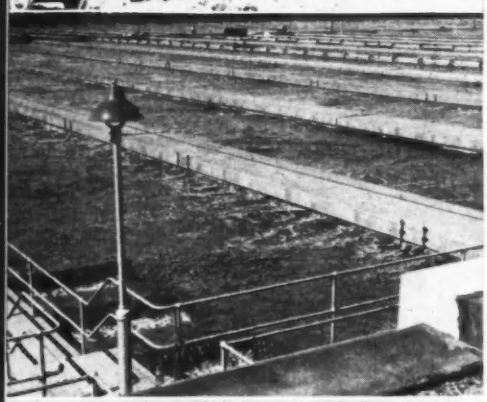
• Right: Empty settling tank shows sloping floor, general construction of these treatment structures.

• Left: Utility lifting service was the job assigned to this Bucyrus-Erie 22-B crane. Here it is moving a section of pipe.

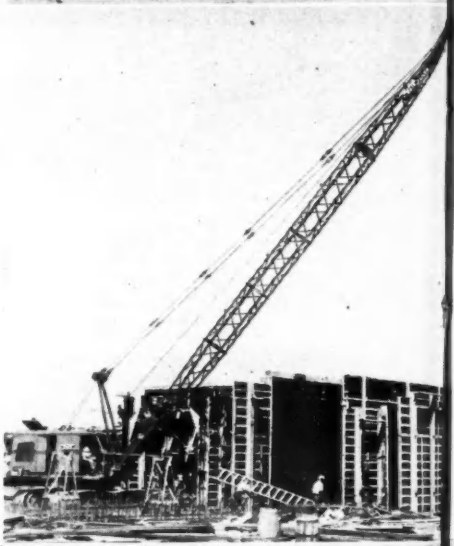




• Right: Much of the excavating and grading in the main excavation was handled by units like this Le Tourneau 12-cu. yd. (struck) scraper drawn by a Catepillar D7 tractor.

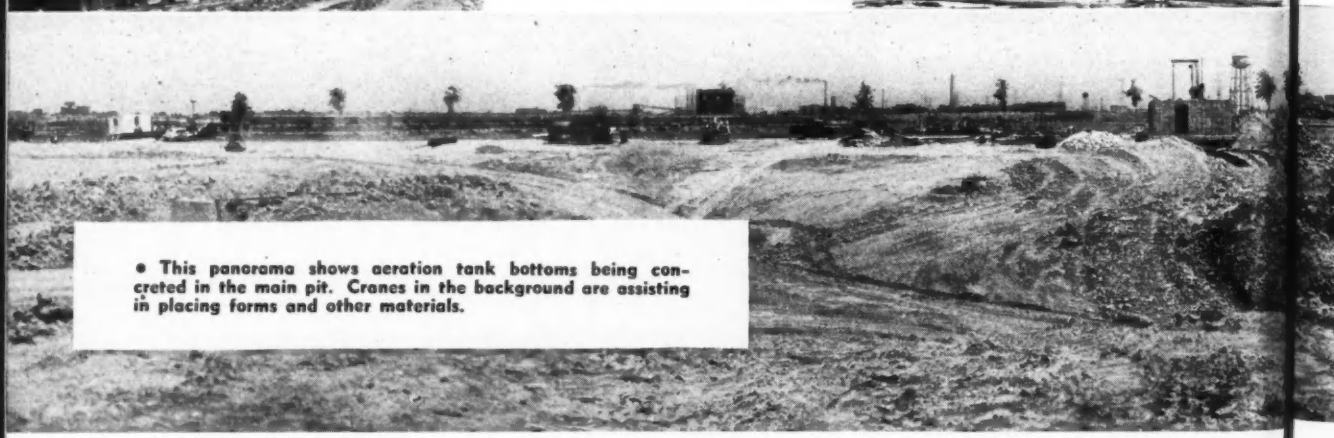


• Left: Close-up of aeration tanks in operation shows sewage flowing from tank to tank during processing.



• Right: The heavier concrete forms at this point in the construction were placed by this Bucyrus-Erie 38-B crane. This machine was also used for placing concrete.

• Left: Sand and gravel are brought in by rail, are stockpiled near the batch plant by clamshells.

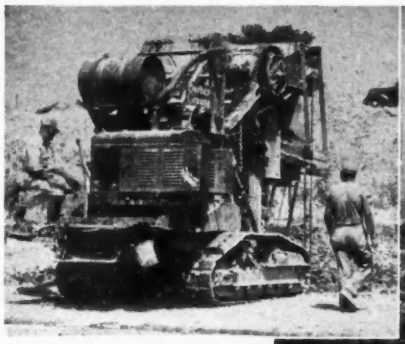


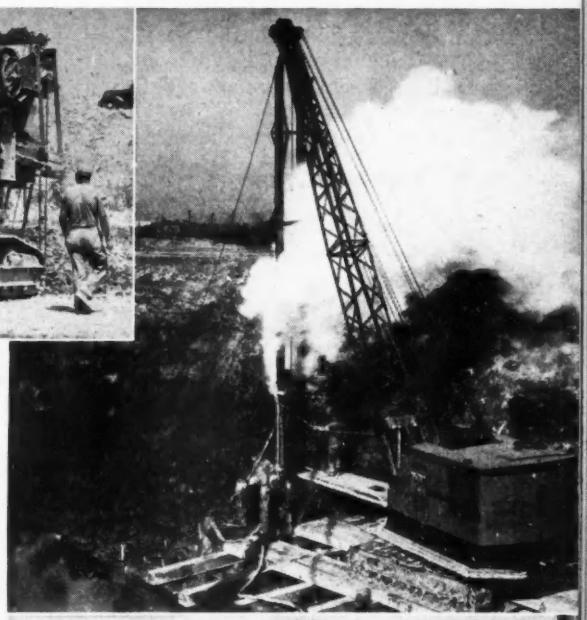
• This panorama shows aeration tank bottoms being concreted in the main pit. Cranes in the background are assisting in placing forms and other materials.

about 75,000 cu. yds., was stripped by five Le Tourneau Tournapulls with Le Tourneau 12 yd. (struck) scrapers; three Caterpillar D7 and three D8 tractors with Le Tourneau 12 yd. (struck) scrapers; six Caterpillar D7 tractors with Trackson loaders, which loaded to dump trucks.

The subsoil in the area was also excavated by the tractor-scraper and Tournapull-scraper combinations. Loading was assisted by two Caterpillar D-8 tractors, one equipped with a pusher plate and the other with a snatch bar. The tractor-scraper combinations handled the short-haul dirt (average 200 ft.) and the Tournapulls took care of the longer hauls, running up to a maximum of 1000 ft.

Approximately half of this dirt had to be transported from the premises, the other half being left for backfilling around the structures. The excess was hauled about two miles from the site by varying numbers of International K-11 four-wheel and six-wheel trucks, equipped with 7 yd. and 10-yd. Anthony truck bodies respectively, and by Ford dumps. Loading was handled by the various draglines on the job and by the tractor loaders.





• **Above: This Barber-Greene ditcher is shown digging pipe trenches.**

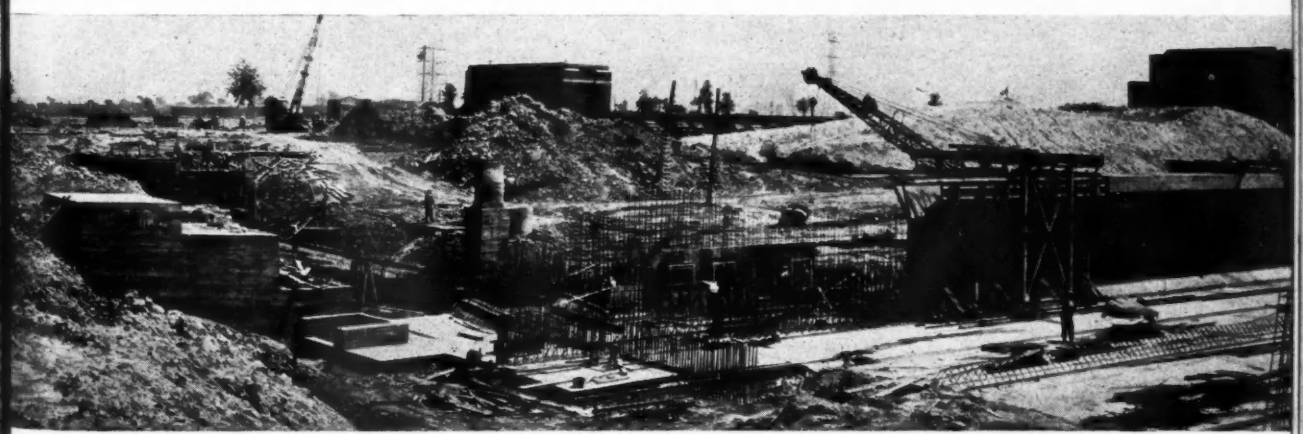
• **Right: Driving piles for the conduit foundation is this combination of a Bucyrus-Erie 33-B and McKiernan-Terry 9-B hammer.**

• **Below: Not all of the excavating is as yet completed. Here a Manitowoc 1⅝-yd. shovel digs out a corner, loading to an Athey 10-cu. yd. (struck) wagon drawn by a Caterpillar D8 tractor.**

Shovel and Clam Work

Where it was inconvenient for scrapers, shovels, draglines, or dragshovels to operate, excavating was handled by a Bucyrus-Erie ½-yd. clamshell, a Manitowoc 1¼-yd. clamshell, and a Bay City ⅜-yd. clamshell, all loading to five Tournapull-drawn 10 yd. (struck) Le Tourneau wagons and three 10 cu. yd. Athey crawler wagons pulled by Caterpillar D-8 tractors.

Excavation for the 4000-ft. effluent conduit was handled by draglines; a Manitowoc 2 yd., a Manitowoc 1½ yd., a Manitowoc 1¼ yd., and a Koehring 1½ yd. The pay yardage was approximately 74,000, but the actual was about twice that much. After construction of the conduit was completed approximately 100,000 cubic yards of dirt, cast by the Manitowoc 2 yd. and Koehring 1¼ yd. draglines, was backfilled over the structure and spread by the bulldozers. The fill was spread by the bulldozers. The remaining excess was taken by a Lorain 1¼-yd. dragshovel which loaded to various dump trucks for transporting from the site.



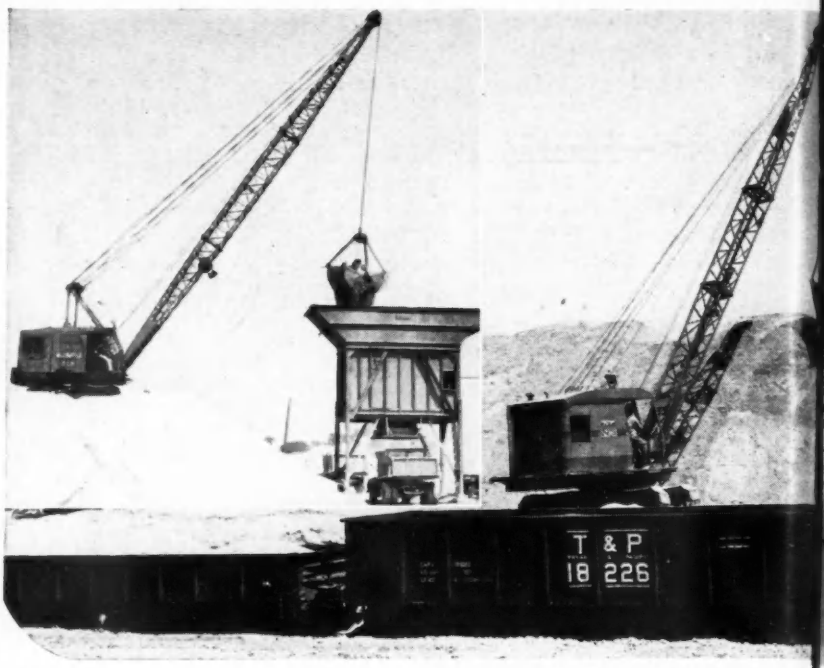
A double-decked effluent, and drain conduit involved 15,000 cu. yds. of excavation and 17,000 of backfill and embankment. This excavation was handled by a Northwest 1¾-yd. dragshovel.

Remaining Yardage

At the time the project was visited in midsummer, all but 156,000 of the total pay yardage of excavation had been completed. Still left to be done were the excavation of the service tunnel, estimated at only 10,000 cu. yds., and final grading of the settling tank area. A Manitowoc 1¼-yd. shovel was, at the time, excavating in the southeast corner of this area. It was loading to two Athey 10 cu. yd. crawler wagons drawn by Caterpillar D8 tractors. These units transported the dirt some 750 ft. away to a pile from which a Bucyrus-Erie 15-B with 40 ft. boom and ½-yd. Owen clamshell bucket took the material and backfilled around structures.

Excavating progress on the project since its beginning has been as follows, with the figures representing pay yardage totals for each period between the dates given:

Start, July 18, 1946	cu. yds.
August 10	24,000
Sept. 6	43,000
Oct. 4	86,000
Nov. 8	75,000
Dec. 13	26,000
Jan. 24, 1947	15,000
Feb. 14	7,000
March 7	7,000
April 4	4,000
May 16	9,000
May 31	4,000
June 20	10,000
July 18	3,000
Aug. 22	31,000

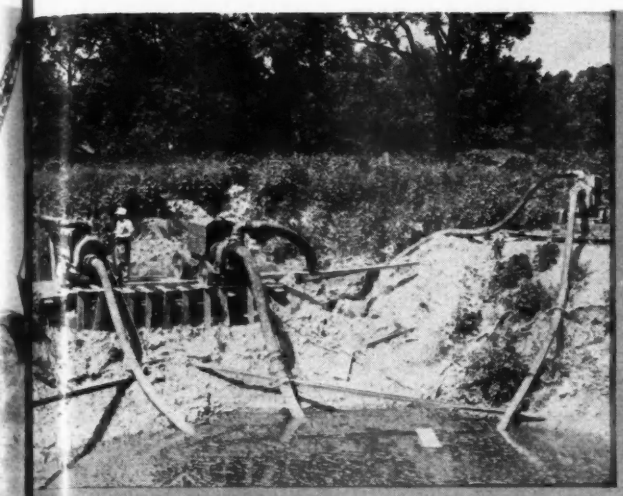


The extremely low yardage totals obtained during the spring months were the direct result of the record rains which made it impossible for excavating equipment to work during most of the period. In April, for example, there was a total rainfall of 8.33 inches—almost six inches more than the normal fall of 2.54 inches, and considerably in excess of the previous April rainfall record established in 1909 when 7.73 inches fell. So far as excavating was concerned, the picture was made even worse by the fact that rain fell on 14 of April's 30 days, and that there was a stretch of six straight days of rain.

May was little better, although the total fall was considerably less: 4.13 inches. What improvement occurred in total fall was,

• Above: The new settling tanks will be of the same general design as these tanks, which are part of the existing installations.

• Right Photo: Concrete for work on the aeration tanks mixed by the Foote 34-E dual drum paver at the left, is pumped through an 8-in. pipe by the Rex 200 Pumpcrete set up in front of the paver.



• Three pumps—a Jaeger 8-in., a Rex 6-in., and a C. H. & E. 6-in.—take water from main sump, pump it over the dike.

Inset at left: This Koehring 604 clamshell with 1½-yd. Owen bucket transfers gravel from stockpile to 100-ton hopper.

• Left: This Bucyrus-Erie 22-B clamshell with 1-yd. Owen bucket is unloading sand from cars and placing it on a batch-plant stock pile.

however, more than offset by the fact that May's rains came even oftener. Twenty different days saw rain fall, with the greatest single stretch being seven straight days.

The abnormally heavy rains of last spring produced severe drainage problems. putting much of the excavated area into virtual flood state and overtaxing the drainage provisions, which had proved adequate so long as rainfall remained somewhere near normal. Three pumps—a Jaeger 8", Rex 6", and CH & E 6"—pumped the water from the main sump over a dyke erected to keep the water away from the project.

While rains slowed excavating progress, delivery problems had a similar effect on construction. Reinforcing steel, forms, and cement were all short, with deliveries in these materials consequently coming in at an extremely slow rate.

Construction work on the Imhoff effluent conduit was the first to feel the pinch, its start not getting underway until September 1946. The delay was entirely due to materials shortages for the excavation had been rapidly completed, as had the pile driving operation in which 43,000 lineal feet of 16 ft. piles were put down to provide a solid foundation for the reinforced concrete conduit. A McKiernan-Terry 9-B hammer, used in conjunction with a Bucyrus-Erie 33-B diesel crane with 55 ft. boom, handled the driving.

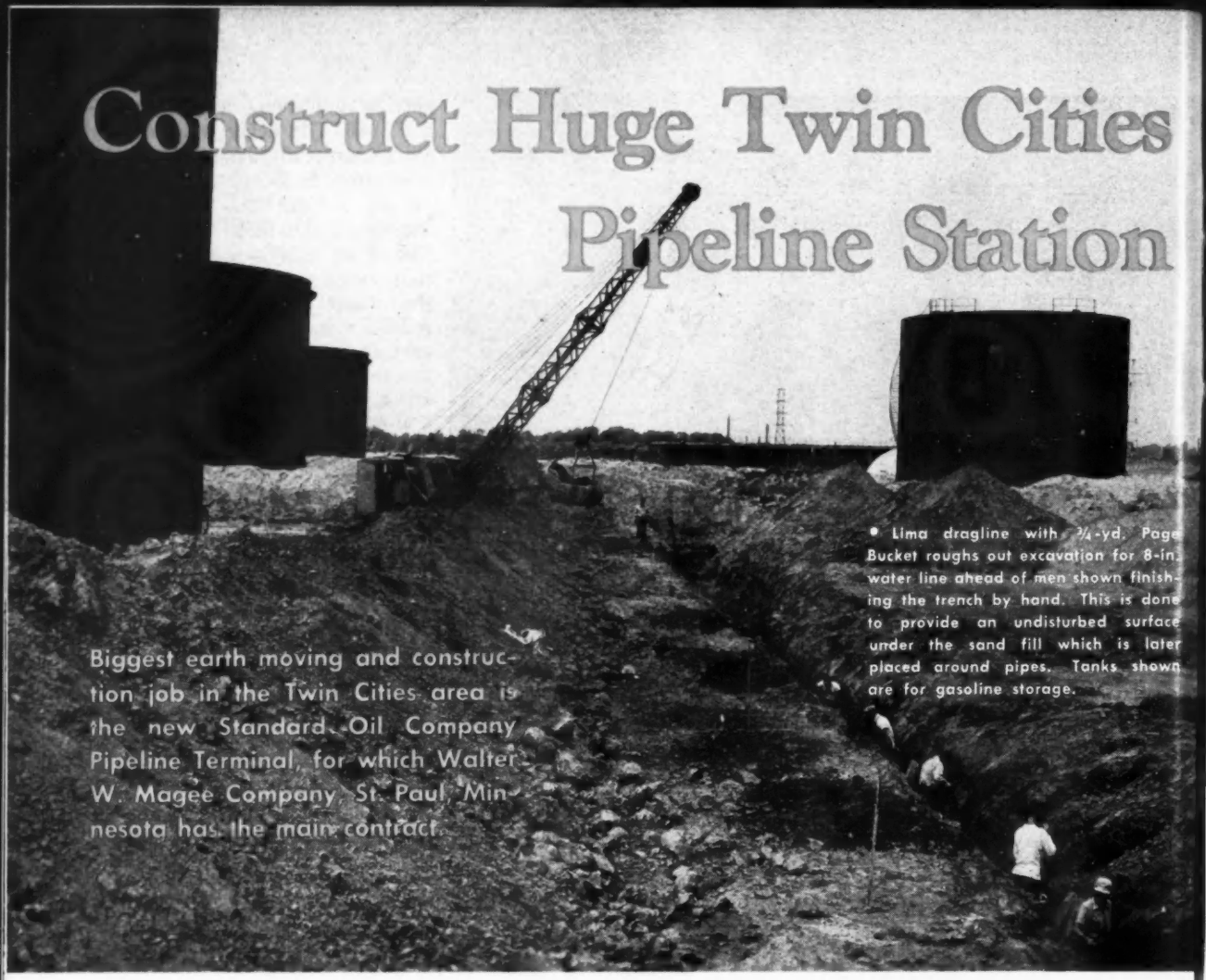
Forms for construction of the conduit were placed by a Bucyrus-Erie 38-B crane with 80 foot boom. This crane, swinging a Blaw-Knox 1½ yd. concrete bucket, also placed the concrete, which was supplied by a Foote 34-E dual drum paver.

Construction of the eight aeration tanks was not begun until late Spring, 1947. Each of these reinforced concrete structures will, when completed, be 434 feet long, 136 feet wide, and 17 feet deep. About 55,000 cu. yds. of concrete, approximately ½ of which has already been poured, will go into the building of these units which together will form a maze-like pattern of tanks through which sewage will pass to be aerated on its way to the final settling tanks.

When the job was visited, concrete for most of the tank bottoms had already been poured, and a few tank sidewalls and end-

(Continued on page 658)

Construct Huge Twin Cities Pipeline Station



Biggest earth moving and construction job in the Twin Cities area is the new Standard Oil Company Pipeline Terminal, for which Walter W. Magee Company, St. Paul, Minnesota has the main contract.

• Lima dragline with ¾-yd. Page Bucket roughs out excavation for 8-in. water line ahead of men shown finishing the trench by hand. This is done to provide an undisturbed surface under the sand fill which is later placed around pipes. Tanks shown are for gasoline storage.

SINCE September, 1946, the Walter W. Magee Company has handled one-half million yards to put in ten large storage tanks and several miles of service lines for the Standard Oil Company's Pipeline Terminal located three miles north of St. Paul, Minn. The 85-acre station will have a storage capacity of nearly 400,000 barrels, and is one of several on the 10-in. pipeline which comes 662 miles to the Twin Cities from the refineries in Whiting, Indiana. This pipeline — serving northern Illinois, northeastern Iowa, southern and western Wisconsin, the greater portion of Minnesota and most of North Dakota—was completed early this year by Bechel Brothers McCane Company, Los Angeles, which firm held the contract for construction of the line from the Iowa border.

A large part of Magee's yardage was accounted for in trenches which had to be put down for the many oil filling and draining pipes, waterlines and sewer lines. Some of these trenches, designed to contain as many as nineteen pipes ranging from 1½ to 10 inches in diameter, were excavated by scrapers to 35 feet wide, 8 feet deep and 700 feet long.

Started Year Ago

Magee got the "go ahead" from the Standard Oil Company to start construction of their station in September, 1946. By working at top speed with many pieces of equipment, ten huge tanks (varying from 26 to 120 feet in diameter and all 48 feet high) were in place and receiving various grades of gasoline from the pipeline early in February. Since that time, Magee has been excavating for and installing an eleventh tank, many auxiliary, oil, gasoline, water and sewer lines and smaller oil storage tanks.

The Magee method for putting down foundations for the 80 to 120-ft. diameter tanks involves removing of the covering layer of mud by use of caterpillar bulldozers and then excavating for the tank ring foundation with a dragline. (the firm has a ¾-yd. Bucyrus-Erie, a ¾-yd. Lima. and a ½-yd. Osgood on this job) to five to 15 feet below grade. At the same time, bulldozers and scrapers are used to pick up material cast out by the dragline and excavate further material to construct an emergency storage basin surrounded by a dike.

Go Below Original Ground

The customer requires that foundations for these tanks go six inches below undisturbed ground level in order to avoid undue settlement. Due to the original rolling topography of the land, it was necessary to do considerable preliminary grading, which resulted in some foundations going as deep as 15 feet.

The dikes are put up very rapidly by the scrapers which move in a circular route, picking up material in the basin area and dumping where the dike (square in plan view) is to be constructed. This procedure builds up a six

foot dike, 12 feet wide at the top, which is eventually finished by means of a dragline to four feet wide at the top, 28 feet wide at the bottom and with a uniform slope.

When the dragline has completed the excavation for the tank foundation, 10-ft. prefabricated form sections built on the job are brought in by Trailmobile trailers pulled by either a Hug or an International truck, set in place by the dragline, and bolted together. Transit-mix concrete is supplied by J. L. Shieley Company of St. Paul, delivered in Smith and Jaeger mixers mounted on International trucks.

Tamp 6-in. Layers

The foundation ring is of 18-in. thick reinforced concrete. After removal of the form, a dragline is used to backfill earth into the foundation area. This earth is carefully placed and tamped in layers of six inches or less, and in order to do this in uniform manner, the dragline moves forward around the foundation, closely preceded by one of the "Cat" tractors pulling a Gardiner-Denver or Ingersoll-Rand compressor to supply air to the tampers.

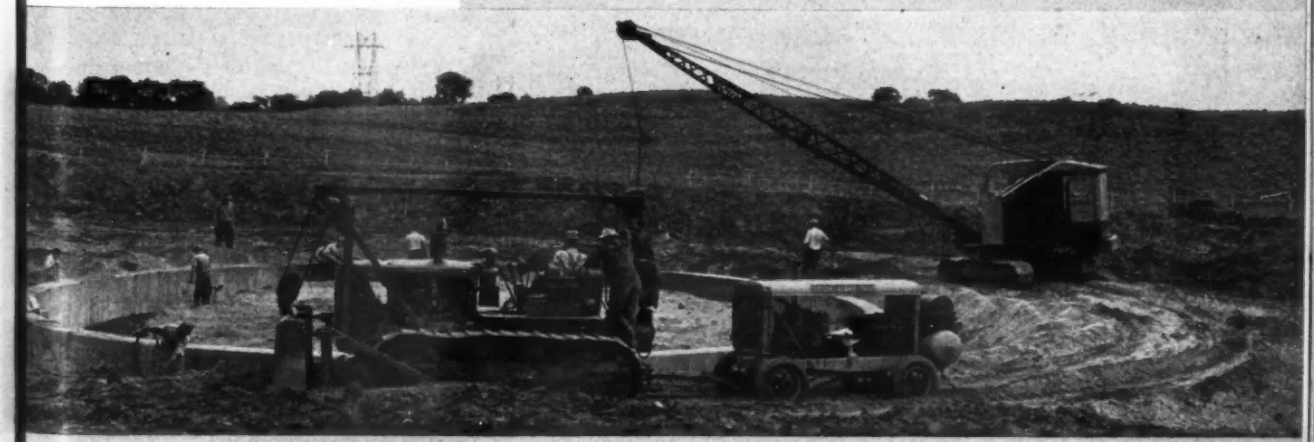
In order to provide a firm, moisture-resisting base for the steel tank, the last two 6-in. layers of material placed inside the foundation are oiled, using one gallon of road oil (tarvia) per sq. ft. to penetrate approximately six inches. This gives a total of one foot of oiled fill. This fill is crowned so that the center is six inches higher than the top of the foundation and oil is applied as a final operation, after tamping.

The bulldozer dresses the circular road ahead of the dragline as it backfills, in addition to keep-

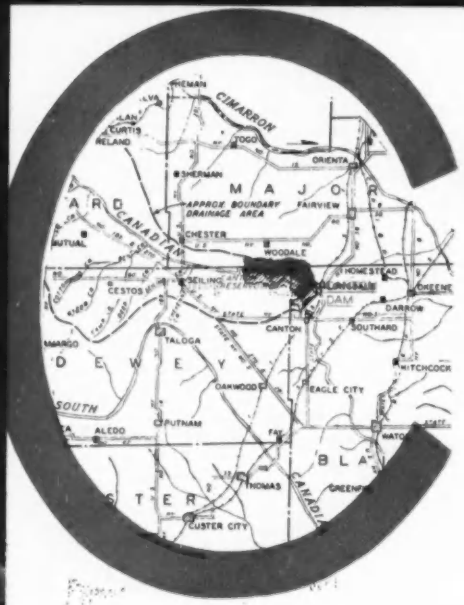
(Continued on page 652)

• A LeTourneau LP scraper pulled by a Caterpillar D-8 tractor dumps its 12-yd. load on the loading dock railroad spur fill.

• This 12-ft. wide trench was excavated by Caterpillar tractors and LeTourneau scrapers. The 8-in. and 10-in. pipes are filling and draining lines, respectively, for th 80-ft. diameter aviation gas storage tank now being erected. Near the far end of this 700-ft. run, men are applying tar and paper to the pipes, which have been blocked to grade.



• Earth fill inside foundation for 80-ft. diameter aviation gasoline tanks is placed by Bucyrus-Erie ¾-yd. dragline and compacted by air tampers. The 210-ft. Gardner-Denver compressor is pulled around foundation by Caterpillar tractor in order to keep it near tamping operation and just ahead of dragline.



ANTON DAM SOON TO CONTROL CANADIAN RIVE

Well along toward completion is Oklahoma's big earth-fill dam. The contractors in the joint venture—C. F. Lytle Company and the Amis Construction Company—will wind up their 3½-million-yd., $5 million venture early next February.

By FRANK M. LA HUE

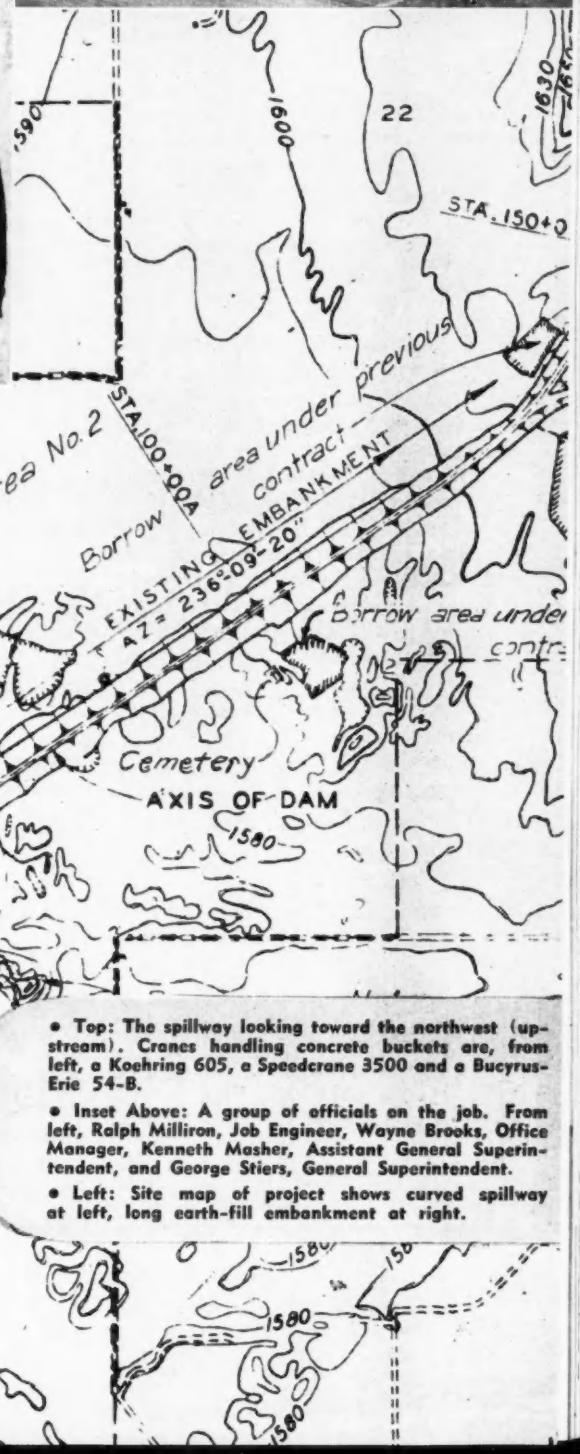
• View from south embankment of spillway shows bucket being loaded for pour of right stilling basin wall footing in foreground. The mixer which has just received a charge of aggregate from the Ford 1½-ton truck, is a Rex 1.4-yd.

CANTON DAM, located on the North Canadian River about 100 miles northwest of Oklahoma City, was authorized by the Flood Control Act of 1938. When completed, the dam and spillway will be 15,078 ft. in length, 76 ft. in height and the width at base will be 470 ft. The permanent pool will be 23,000 acre feet of water and the initial irrigation pool, 92,000 acre feet. At spillway crest, 110,000 acre feet will be impounded and the flood control pool will impound 390,000 acre feet. The river drainage area will be 11,640 square miles and the dimension of the lake at maximum surcharge will be 15,500 acres.

The excavating and construction contract was let by the U. S. Engineers in February 1946, to the C. F. Lytle Company, Sioux City, Iowa, and the Amis Construction Company, Oklahoma City, Oklahoma as joint bidders. These two concerns are also constructing in a joint venture the Bureau of Reclamation's Potholes Dam near Moses Lake, Washington.

The project consists essentially of a 14,300-ft.-long rolled earth-filled embankment, four

(Continued on page 656)



- **Top: The spillway looking toward the northwest (upstream). Cranes handling concrete buckets are, from left, a Koehring 605, a Speedcrane 3500 and a Bucyrus-Erie 54-B.**
- **Inset Above: A group of officials on the job. From left, Ralph Milliron, Job Engineer, Wayne Brooks, Office Manager, Kenneth Masher, Assistant General Superintendent, and George Stiers, General Superintendent.**
- **Left: Site map of project shows curved spillway at left, long earth-fill embankment at right.**

No Blastee, No Monee—

—but the owner was unable to make his reason for non-payment stick when the contractor appealed to a higher court. An account of a contractor's problem in securing payment for classified rock excavation under unusual contract conditions.

By LESLIE CHILDS

• Classification of materials is sometimes a source of dispute.

UNDER the best of conditions, classification of materials in excavation contracts is sometimes a source of dispute. If payment is made dependent upon the method used in removing the material, the situation may indeed be aggravated. And when the courts, if appealed to, view the subject within its strict letter, a costly controversy may easily develop.

A case of this kind, unique in its circumstances, contract requirements, and subsequent judicial history, arose in Pennsylvania not long ago. It ran the gamut of the courts with the attendant costs and delay. The facts, boiled down, were:

The appellant contracted with the appellee, a general contractor, to do the excavating and concrete work in the erection of a building for the lump sum of $3,050. The contract also provided:

"In excavating if rock be found which would require removal by blasting $1.10 per cu. yd. will be paid for by measurements of the architect and certificate furnished by him."

The appellant completed the contract and was paid the agreed $3,050. In addition appellant demanded $902 for the removal of rock amounting to 820 cubic yards, at $1.10 per yard as provided in the contract. This was contested on the ground that the rock had not been removed by blasting, as required by the terms of the contract, but had been excavated by a jack hammer operated by compressed air.

This was conceded. But the appellant set up that, since the site of the excavation was in a closely built-up section of the city, he was afraid to use dynamite for fear of damage to adjacent buildings; that he thereupon used the jack hammer method, though it was more expensive than blasting would have been.

Appellant filed suit to enforce his claim. The lower court found against him. The superior court sustained the finding, giving the conditions of the contract a strict construction. From this judgment, the appellant appealed and the higher court in reasoning on the equities of the case and in directing a judgment for the appellant, had this to say:

"* * *the architect certified to the removal of 820 cubic yards of rock. * * * While it is true that the rock was not removed by blasting, * * * the uncontradicted evidence is that the rock was of such a character that would ordinarily require removal by blasting, which was not resorted to because of the danger to life and property.

• Appellant was afraid to use dynamite for fear of damage to adjacent buildings.

"The lower court held that appellant could not recover because the rock had not been blasted. The Superior Court took the same position. * * * We must say we think this is a forced and strained construction of the contract. * * *

"We think the learned Superior Court was in error in holding that the phrase 'which would require blasting' is equivalent to 'requires blasting,' and is mandatory. We think such conclusion unreasonable, when viewed in the light of the grievous damage and loss it would visit upon appellant. That phrase is simply descriptive of the kind of rock which was to be removed, and for which extra compensation was provided. * * *

"Judgment of the Superior Court is reversed; judgment is here entered in favor of appellant and against appellee in the sum of $902 with interest."

So ended the case with the excavation contractor finally victorious. But this only after several years of litigation that ran its course from the lower to the higher court. This was victory that must have been tempered by the long delay and cost incident to its prosecution and final conclusion.

As noted before, this case appears to be in a class by itself,

(Continued on page 654)

CHOSEN TO POWER THE WORLD'S LARGEST, MOST POWERFUL TRACTOR

Brute strength and velvet control are combined in the new Allis-Chalmers HD19 40,000 lb. torque converter tractor, powered by a 6-cylinder General Motors 2-cycle Diesel engine.

—the General Motors Diesel Engine

The new Allis-Chalmers HD19 tractor with hydraulic torque converter is powered by a General Motors Series 71 2-cycle Diesel engine.

To quote Allis-Chalmers, this new, mighty tractor was "built to get more work done—built to last longer with less upkeep." The GM Diesel with its wealth of smooth dependable power will do its full share in making good on both points.

Allis-Chalmers' selection of the GM Series 71 engine for the world's largest, most powerful tractor is in line with the thinking of more and more builders of shovels, cranes, soil stabilizers, pumps, air compressors, ditchers, dirt wagons and other heavy road-building and contractors' machinery.

The GM Diesel engine is the logical choice where quality of manufacture and PERFORMANCE count.

DETROIT DIESEL ENGINE DIVISION

DETROIT 28, MICH. ● { SINGLE ENGINES . . Up to 200 H. P. / MULTIPLE UNITS . . Up to 800 H. P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

Field NOTES

Dismounting Large Bearings

Here's an economical and time-saving method of removing large anti-friction bearings from machines—in minutes instead of hours.

The method consists of pressuring oil from a hand-operated hydraulic pump between the bore of the bearing and the shaft on which it is mounted. This makes the inner ring expand and "float" on the oil film, enabling the operator to remove the bearing with greater ease and in less time. The application of oil at 7,000 to 8,000 pounds per square inch reduces dismounting time to ten or fifteen minutes, as compared with several hours required by the former method involving use of pullers and hydraulic jacks.

Courtesy SKF Industries, Incorporated

Soil Compacting Method

Investigators of the British Intelligence Objectives Sub-Committe, who inspected several German engineering and construction companies and the soil mechanics laboratories of three German technical institutes, have described the "Franki" technique of compacting sandy soil to provide stable foundations for buildings.

The "Franki" method is based on the driving of a steel tube, with a concrete foot held to the bottom of the tube by friction. The driving is done by a tamper which is dropped down the tube to strike on the foot. After being driven to the required depth, the tube is gradually withdrawn and broken stone is fed down the tube and tamped. Thus a pile of frictional material with no bonding matter is formed in the ground. The vibration of the tamping process compacts the sandy soil. On one project in Germany the allowable load on the soil was raised from two kilograms per square centimetre to four and one-half by the "Franki" method.

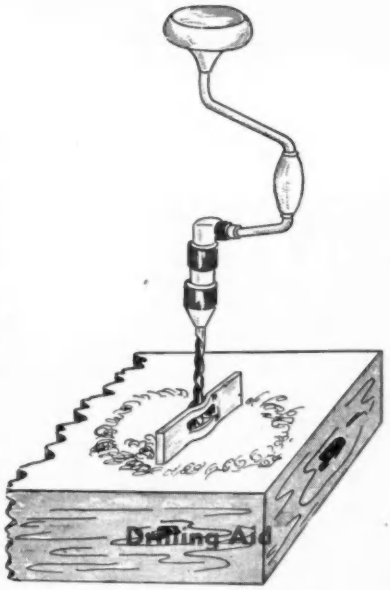
Reprinted from Department of Commerce Advance Release 14412

Cylinder Lubrication Test

Seeing shouldn't be believing as far as cylinder lubrication is concerned. Although the walls of a cylinder may look properly lubricated, actually they might be covered with only a dangerously thin coating of oil.

There's a simple method to determine whether a cylinder is receiving sufficient oil. Just take three pieces of white paper and rub them on the top, bottom, and around the sides of the cylinder. Examination of the oil deposit left on the paper will tell you exactly how well your cylinders are being lubricated.

W. F. Schaphorst



Here's a way to stop that common block to efficient drilling of deep holes in wood—wood chips collecting and falling into the hole, making it difficult to remove the drill. All you need to do is take a strip of leather, cardboard, sheet rubber, or gasket rubber; cut two slits in the strip; and force the drill shank over it. As the drill revolves, friction on the strip keeps it spinning, fanning and wiping away all chips from around the hole. With deeper penetration, the strip slides up over the drill shank automatically, does not need to be moved up by hand.

Vollie Tripp

Improvised Trailer

The difficult job of moving the Kelly Pile & Foundry Corporation's Marion crane from Philidelphia to New York was speeded by the use of an efficient improvised trailer.

Gerosa Haulage Corporation, after undertaking the job of moving the crane from the Quaker City to the Bronx, found that the unit was too unwieldy and heavy to load on an ordinary trailer. Mechanics came through with an idea that quickly solved the problem. Two steel I-beams were used to make an improvised trailer, built low to the ground. Front end of the trailer was hooked on the back of a truck, while the unit was supported at the rear by eight Goodyear All-Weather tires.

Courtesy Goodyear Rubber Company

He gives bearings a rub-down to put curves in the right places

. . . for faster operation, greater accuracy, maximum load capacity

IN the final manufacturing process, Timken T-type thrust bearings are assembled and processed so that the surfaces of the ribs, rollers and races are generated as a unit. The bearing thus becomes a "Generated Unit Assembly".

This extra process produces a smoothly-curved area of contact between the end of each roller and the cone rib against which it operates, so that the convex shape of the roll end and the concave surface of the cone ribs are identical in contour.

We developed this process years ago for thrust bearings which must operate under extreme loads with high roll and pressures against the cone ribs end since have adapted it to other Timken bearings, including those used for precision machine tools, steel mill and railroad equipment and other applications.

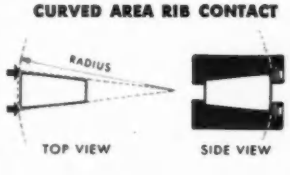
Today "Generated Unit Assembly" reduces friction and wear to the vanishing point; increases load capacity; assures positive roll alignment; eliminates the need of breaking-in or final adjustment on the job; and lengthens bearing life. It is one of the many reasons why it pays to have Timken bearings in every machine you manufacture or buy.

REMEMBER, Timken bearings are produced by the only bearing manufacturer in the country making its own steel and Timken is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels. The Timken Roller Bearing Company, Canton 6, Ohio.

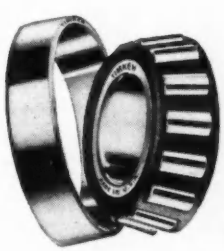
GENERATED UNIT ASSEMBLY

Extra manufacturing process makes Timken heavy duty thrust bearing a "Generated Unit Assembly".

CURVED AREA RIB CONTACT



Curved area of roll end (at arrows) fits perfectly the curve of upper and lower ribs of this thrust bearing.



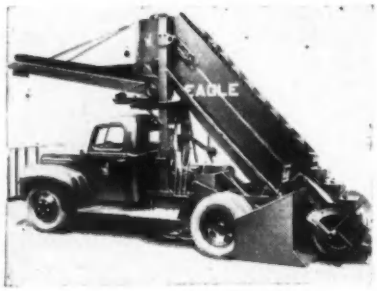
TIMKEN

TRADE MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◎ AND THRUST →◎← LOADS OR ANY COMBINATION →✳←

Equipment you ought to KNOW ABOUT



Truck-Mounted Loader

Manufacturer: Eagle Crusher Company, Incorporated, Galion, Ohio.

Claims: According to the manufacturer, the features incorporated in the new Model "400" Eagle Truck-Mounted Loader increase its speed and ease of maneuvering. Four of the features are: full hydraulic control, lower overhead clearance, conveyor discharge, and positive crowd.

The loader can be used by state highway departments, counties, contractors, building supply and coal dealers, and manufacturing concerns for the handling of stone, cinders, coal, plaster, sand, slag, and other loose materials.

"Inter-Com" System

Manufacturer: Talk-A-Phone Company, Chicago 23, Illinois.

Claims: This new inter-communication system consists of a master station and the required number of sub-stations. It delivers a maximum of 2½ Watts of "Voice Range" Power.

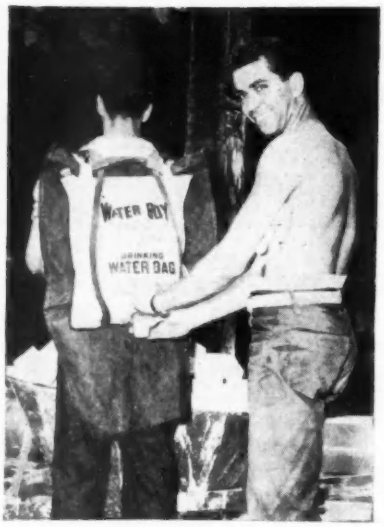
According to the manufacturer, the system permits fast communication without use of switchboards or other "middle-men." A silent feature keeps the master station from picking up any of the noise surrounding sub-stations.

Lubricating Grease

Manufacturer: Knapp Mills, Incorporated, New York, N. Y.

Claims: Now in production is a new lubricating grease for open gears and bearings. Called "Lead-Lube," the product is a mixture of fine metallic lead powder, and high grade lubricating grease. According to the manufacturer, it should prove useful in ball mills, hoists, pumps, kilns, in the production of wire rope for dredging equipment, in tumbler and trunnion bearings, chain drives, etc.

It is said that after a period of use, "Lead-Lube" will form a coating of metallic lead over all gear and bearing surfaces. When this lead coating is formed, the requirements for additional grease will have been reduced to an absolute minimum.



"Water Boy" Bag

Manufacturer: H. Wenzel Tent & Duck Company, St. Louis, Mo.

Claims: A new type 5-gallon capacity canvas water bag, for use in carrying drinking water to men working on construction jobs is now available. Called the "Water Boy," the bag has a complete shoulder harness and apron which straps to the back of a water carrier.

A sanitary chrome spigot at the bottom of the water bag can be used either as a faucet to fill cups, or can be turned up and used as a bubbling fountain. Heavy canvas design allows water to seep slowly through and be evaporated by air, thereby keeping the water inside the bag cool and fresh throughout the day.

Detachable Moil Point

Manufacturer: Rock Bit Sales & Service Company, Philadelphia 25, Pa.

Claims: A new addition to the field of paving breaker tools is the "Rockbit" Detachable Moil Point. The company states that during recent tests on a street project the new point broke 32 square yards of concrete with one regrind.

It is said that when the point wears out, it can be detached and a new point placed on the same shank.

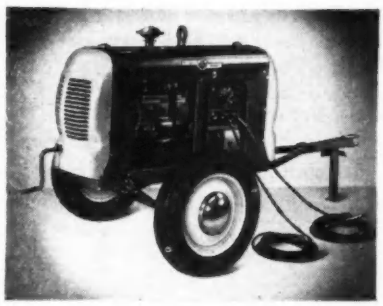
Portable Crushing Plant

Manufacturer: New Holland Manufacturing Company, Mountville, Pa.

Claims: A one-man portable two-unit crushing and screening plant, adaptable to either gravel crushing or quarry operations, is now on the market.

Diesel power plant operates the 3030 Double Impeller Breaker, while an electric generator, driven from the same diesel, supplies power for driving the feeder, conveyors, screen, and elevating wheel on the screening unit. Individual electric motor drives eliminate chains, sprockets, and counter shafts.

The plant is said to have a capacity of up to 200 tons of crushed stone per hour.



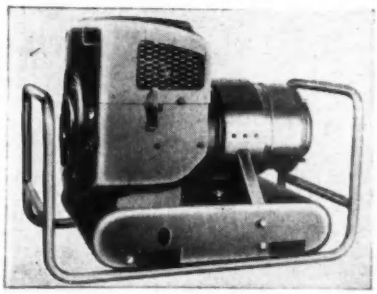
Engine-Driven Welder

Manufacturer: Westinghouse Electric Corporation, Pittsburgh 30, Pa.

Claims: A new light-weight engine-driven welder is now in pro-

duction. Each welder comes complete with accessories which include: work and electrode leads, helmet, electrode holder, a supply of electrodes, and a wire scratch brush.

Called the "Ranger," this DC welder can be towed anywhere a jeep can take it. The design characteristics of the generator provide easy striking and maintenance of the arc for welding on steel, cast iron, alloys, and brass.

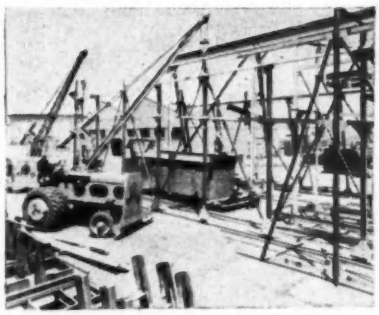


Light-Weight Electric Plant

Manufacturer: D. W. Onan & Sons, Incorporated, Minneapolis 5, Minn.

Claims: Known as the "5CK-115M," this new 5,000-watt electric plant weighs 272 pounds and employs the new Onan "CK" air-cooled, four-cycle, two-cylinder gasoline engine as prime mover.

Stating that the plant is the result of years of development of both engines and generators, the manufacturer adds that the finished product weighs only 54.2 pounds per thousand watts and that it will produce about one-kilowatt hour of electricity per quart of gasoline.



"Hendy" Tractor Crane

Manufacturer: Joshua Hendy Corporation, Torrance, Calif.

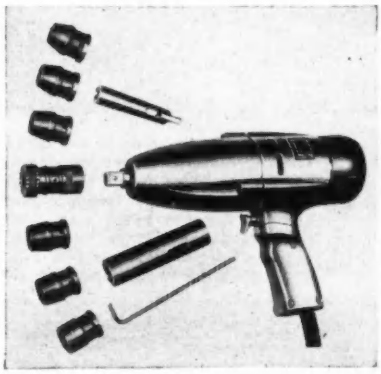
Claims: Mounted on a Model "UTI" Minneapolis Moline wheel tractor, the Hendy Type "U" Crane has a lifting capacity of from 1½ to 4 tons. According to its manufacturer, easy steering is coupled with large capacity. Special steering gear with roller bearing knuckles is said to provide quick maneuverability. Enclosed stabilizers permit full front axle movement for smoother traveling.

The steel boom is raised and lowered by a hydraulic cylinder mounted on the gantry and controlled by a valve at the right of the steering boom. It is claimed that this hydraulic action provides independent boom topping at all times with absolute speed control.

All-Purpose Impact Tool

Manufacturer: Ingersoll-Rand Company, New York 4, N. Y.

Claims: Using standard attachments, this new electric, all-purpose impact tool (designated as size 4U) will apply and remove nuts; drill, ream, tap, drive, and remove screws; drive and remove studs; extract broken cap screws



and studs; run wire brushes; do hole saw work; drill brick and masonry; drive wood augers.

Weighing 6½ pounds, the machine has an over-all length of 10½ inches, a free speed of 2,000 rpm, and delivers 1,900 rotary impacts per minute under load. It is powered with a specially designed electric motor (3 amp.) that operates on 110 volt, AC-DC current.

The Impact Tool runs just as any conventional electric tool until the resistance to spindle rotation reaches a certain amount. Then a patented mechanism converts the power of the motor into "rotary impacts" for more powerful turning effect.

Seven-Yard Concrete Mixer

Manufacturer: R. G. LeTourneau, Incorporated, Longview, Texas

Claims: The "Tournamixer," a seven-yard transit concrete mixer, is designed to work with the "Tournalayer" machine for mass production of concrete houses. The new mixer is capable of pouring concrete up over the top of house forms, as high as twenty

feet. This eliminates the necessity for scaffolding, discharge or distribution chutes, troughs, wheel barrows, or similar equipment.

The "Tournamixer" operates at a selectively variable speed in either direction of drum rotation. This permits concrete to be thoroughly mixed while rotating in one direction, and to be forced out the discharge end, due to the corkscrew action of the blades, when rotating in the other direction. Such method of control has done away with the need for a discharge door.

The "Tournamixer" is highly mobile . . . and can travel to pouring sites under its own power.

"Caterpillar" Scraper

Manufacturer: Caterpillar Tractor Company, Peoria 8, Ill.

Claims: Designed exclusively for use with the "Caterpillar" diesel DW10 wheel-type tractor is the new No. 10 "Caterpillar" scraper. It has a heaped capacity of 11 cubic yards and embodies the following features: Open-bowl design for greater stability, visibility, and access for shovel and dragline loading; high apron lift for ease of material clearance; positive forward ejection; long cable life.

Shots from the FIRING LINE

Note 50% Increase in New Home Construction in Cities

Construction of new homes in 115 key metropolitan areas of the United States last year was more than 50 per cent greater than in 1939, according to the annual Investors Syndicate survey of housing construction.

The increase over 1945, when civilian home building got under way late in the year, was 410 per cent. Total new housing units built in these key communities in 1946 was approximately 412,455 against 101,511 in 1945. At the same time, average cost per unit has increased by 45 per cent, from about $4,725 in 1939 to $6,870 in 1946.

New Rental Building Down

There has also been a sharp swing away from apartments to one and two-family homes, the survey shows. While in 1946 there were more than twice as many homes built as in 1939, there were 30 per cent fewer apartments.

"These figures," reports the Investors Syndicate, "indicate how seriously rental restrictions have affected the construction of rental housing. Although the demand for apartments is very great, builders cannot find it profitable to erect multiple-unit apartments and have concentrated on single-occupany homes for sale. The small volume of apartments built during the war and under rent ceilings will undoubtedly affect the housing situation for many years to come."

Housing construction in 1946 was exceedingly spotty, the survey showed. Despite the fact that demand was great in virtually all of the centers studied, a number of them showed little increase in home building over 1939, while several showed marked decrease.

Give Percentages for Cities

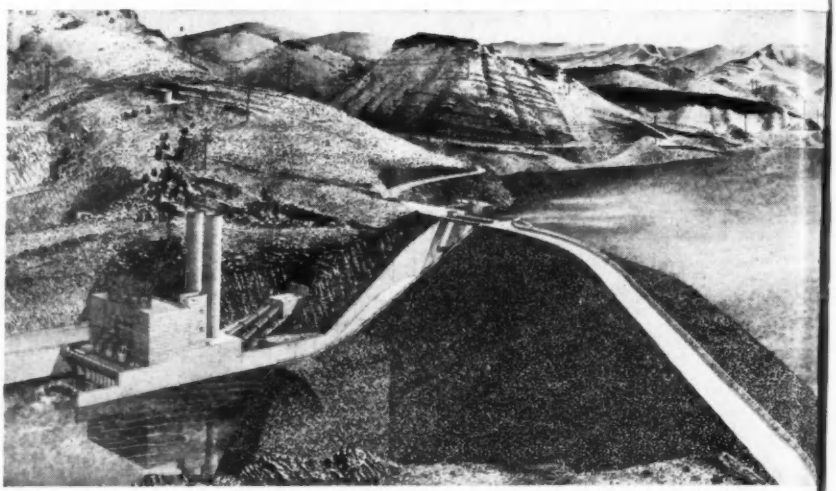
San Francisco showed a decrease of about 20 per cent under 1941 in the number of units built, from more than 7800 to about 6150. Peoria, Ill., built only about 15 per cent as many homes in 1946 as in 1939, slightly more than 200 compared with nearly 1500. Other places showing decreases from 1939 were Bronx, New York, Kings and Queens counties in the New York City area; Chattanooga and Knoxville, Tenn.; Jersey City; Philadelphia; Tulsa, Okla.; El Paso, Texas; and New Orleans.

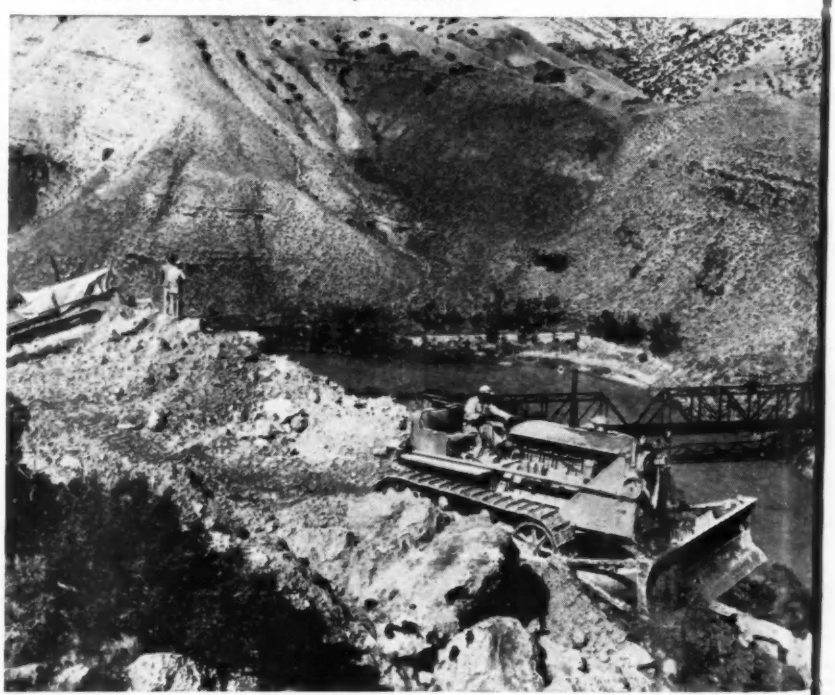
Areas in which increased home building was most marked included Baltimore; Cleveland, Columbus, Akron, Toledo, Cincinnati and Dayton, Ohio; Cook County, Chicago, Ill.; Milwaukee; Minneapolis, St. Paul, Minn.; Atlanta; Nashville and Memphis, Tenn.; Camden, N. J.; Birmingham; Palm Beach and Miami, Fla.; Ft. Wayne, Gary, Indianapolis, South Bend, and Mishawaka, Ind.; St. Louis; Richmond, Va.; Greensboro-High Point, N. C.; Kansas City; and Los Angeles.

Cities which built approximately as many housing units in 1946 as in 1939 include Boston, Providence, Detroit, and Seattle.

Investors Syndicate also found that there has been a sharp shift away from public housing. Although 13 per cent of all housing constructed in these key areas in 1939 was publicly built, only 5 per cent was public construction in 1946.

Greatest increase in housing over 1939 was in the South Atlantic states, where more than four times as many units were built in 1946 as in the pre-war year. In New England, the East



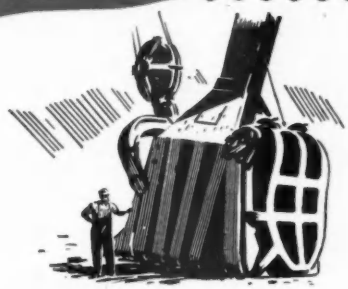


• Artist's conception of the $13,900,000 Boysen Dam, to be the first of the Bureau of Reclamation's key dams for harnessing the Missouri River's tributaries. Located on the Big Horn River near Thermopolis, Wyoming, the big earth-fill structure will be 150 feet high and 1,100 feet long at the crest, with a 15,000-kilowatt capacity power plant (seen here at left on the downstream face). In the photo below, Caterpillar D-8 bulldozers are working near the site on the relocation of U. S. Highway No. 20, which is being removed to higher ground to avoid the area to be flooded by the reservoir.

Know the Facts About Your Field

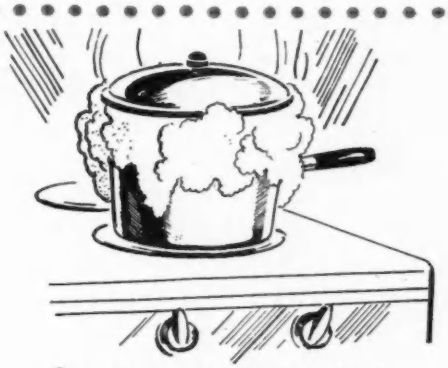
1 WHAT IS THE THICKEST VEIN OF BITUMINOUS COAL?

☐ 50 feet ☐ 75 feet ☐ 100 feet



2 WHAT IS THE SIZE OF THE LARGEST POWER SHOVEL BUCKET?

☐ 40 cubic yards ☐ 55 cubic yards
☐ 25 cubic yards



3 WHAT MINERAL "GROWS" 16 TIMES WHEN HEATED?

☐ Vermiculite ☐ Asbestos ☐ Chromite

4 WHAT IS A GELAMITE?

☐ An explosive for mining or quarrying
☐ Soft, iron-bearing ore
☐ An insect that feeds on earth or rock

ANSWERS

1 A vein of bituminous coal, now being worked at the Elkol Mine, Elkol, Wyo., is 100 feet thick at points and is from 20 to 50 feet thick along the working face. This rich vein is reputed to be thickest in the world.

2 Forty cubic yards is the size of the world's largest bucket now in operation on a shovel at the Hanna Coal Company, near Cadiz, Ohio.

3 Because it often expands or exfoliates to 16 times its original size when heated, the non-metallic mineral, Vermiculite, has found widespread use as an insulating material. Recently, this valuable mineral has also been employed extensively as a light-weight aggregate in concrete.

4 Gelamite® is the name of a series of semi-gelatin explosives made by Hercules. In mining, quarrying, and excavating, they effectively and economically replace gelatin dynamites for many blasting jobs. The Gelamites are just one example of the wide range of explosives and blasting supplies Hercules produces to meet the requirements of every blasting job.

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North Central states, West North Central and Pacific Coast, building was about double the '39 level, while increases of about 50 per cent were registered in the Middle Atlantic, East South Central and Rocky Mountain areas. In the West South Central region building fell to only half of the '39 level.

Best indication of the actual increase in housing construction costs, said Investors Syndicate, is a comparison of the cost per square foot. While some unit costs can be lowered somewhat by reducing areas and otherwise cutting corners, per square foot costs tell the actual price of living space. Whereas it cost about $3.50 a square foot to build in 1939, in 1946 it was around $6 to $7—an increase of around 70% to 100%.

Highway Research Board Meeting Set for Dec. 2nd

The Highway Research Board announces that its 27th annual meeting will be held this year from December 2nd through the 5th at the building of the National Academy of Sciences and National Research Council, 2101 Constitution Avenue, Washington, D. C.

It is expected that this meeting will exceed in attendance the annual meeting of the Board held in Washington last December when 700 persons registered, and 71 timely technical topics were presented and discussed at 18 separate public sessions. Thirty-nine State highway departments, 28 colleges, 3 Canadian provinces, and 13 nations other than Canada and the United States were represented.

During the week of the Annual Meeting the six departments of the Board—Economics, Finance and Administration; Design; Materials and Construction; Maintenance; Traffic and Operations; and Soils—will present and discuss important phases of highway technical development. Many of their 65 project committees also will meet.

• Aerial views show the dredge Missouri (above) clearing a new channel for additional docking facilities in the Port of Tacoma, Washington, and the 300-acre fill (below) being built up between the two roads by material removed from the river bottom.

Dredge Harbor and Build New Industrial Area in One Operation at Tacoma

By A. R. MacPherson

The General Construction Company of Seattle, is engaged in carrying out a dredging job of considerable proportions in Tacoma, Washington. It comprises two distinct engineering operations requiring 8 months for completion. The dredge Missouri is being used on the project to dredge and clear a new channel for additional docking facilities at the Port of Tacoma piers. Silt material brought up from the channel bottom is pumped back into a 7,000-ft. pipe line to fill in the Port of Tacoma's 300-acre industrial quadrangle located on an adjacent tideflats area.

Tacoma's Port Commission acquired most of the land in this area for taxes. Tracts of this reclaimed land are resold at cost for industrial purposes, and when completed will consist of a 3,000,000 cubic yard fill, giving Tacoma an ideal industrial area "unequalled on the coast." The entire site is encircled by a municipal railroad, has private and public ocean shipping facilities nearby, with adequate water supply and the "cheapest electric power rates in the World."

The Missouri is dredging out the Sitcum channel for approximately 3,600 feet to a width of 500 feet at the bottom of the channel, and equivalent to a minus 35-ft. tide. Operating at a pressure of 100 p.s.i., the fill material is scooped up by the dredge pump from the bottom of the channel and forced back into the 18-in. pipe line to be deposited on the tideflats.

According to Dredgemaster Franch Gichard, a veteran of 37 years' work in clearing channels and waterways, it is necessary to stop the entire operation as often as five or six times an hour to clear out the big pump. The present job happens to be located on the site of a long forgotten log dump, and bits of chain and old timber are continually clogging the pump. Old automobile tires cause the most trouble, jamming up the mechanism with twisted wires.

Most of the debris too big to pass

• Neelo L. Teer Company's ID-9 International wheel tractor pulls a Timco pneumatic-tired road packer on a road job near Durham, N. C. When fully loaded with sand, the packer weighs 10 tons.

• Bureau of Reclamation guide map for the Columbia Basin Project shows inter-relation and location of various component projects.

thru the pipes is caught and removed right at the pump, but sometimes it is necessary to open up some part of the long pipe system, go in with sledges and pound out the obstructions.

The Missouri is an old-timer in the business, having been constructed in 1923 for the Long-Bell Lumber Company. Since then, Gichard has worked the Missouri on various projects from Alaska down the coast to Coos Bay and on Puget Sound jobs. Another veteran working with Gichard in the control room of the dredge is Joe Jazek of Tacoma, who during the last war was busy all over the Pacific area in dredging operations. Some 50 men are employed on the present project.

Predict Stabilization of Construction Costs at January, 1947, Level

Stabilization of construction costs at about the January 1, 1947, level is predicted by Harry A. Ward, vice president of the Turner Construction Company of New York, Boston and Philadelphia. He foresees no major decline in construction costs.

In criticizing the many recent "optimistic predictions" of declining costs as "harmful to the country as a whole," Mr. Ward explained that such predictions lead to postponing of construction. He said that if building construction is curtailed for too long a period, contractors and material producers will be forced to reduce their staff and their rate of production. Then, when the backlog of construction work is released, it will place a burden on builders and producers of materials and costs will rise abnormally as they did in 1920.

The increase in today's construction costs over those of 1939 has not been as great as the increase in the cost of many items entering into everyday life, nor have on-site building wages increased in as great a proportion as factory wages, he stated.

Wages Won't Come Down

He explained that wage rates are not expected to come down. Work taken over by craftsmen at higher wages cannot be restored to lower paid branches of labor, nor can the additional cost of paid holidays be eliminated. The construction worker, said Mr. Ward, has ceased to be a floater and prefers to remain in a fixed position.

"We do, however, expect greater efficiency in operation of the job which may help to offset the increase in cost that is being brought about today because wages are still being increased," he continued.

Offering no prospect of reduction in contractor's fees, Mr. Ward said, "Fees received by contractors are exceedingly low, averaging less than 6 per cent of the cost of the work on large contracts from which must be subtracted the contractor's office overhead which may run anywhere from 3 to 5 per cent."

A softening of the material market has been indicated recently, but Mr. Ward predicted that the cost of build-

(Continued on page 626)

• View of Standard Material Company's quarry in Lopel, Ind., shows a Bucyrus-Erie 1-½-yd. shovel loading out limestone and a Bucyrus-Erie 22-T drill putting down blast hole in right background.

When Tractor and Equipment are ONE Machine

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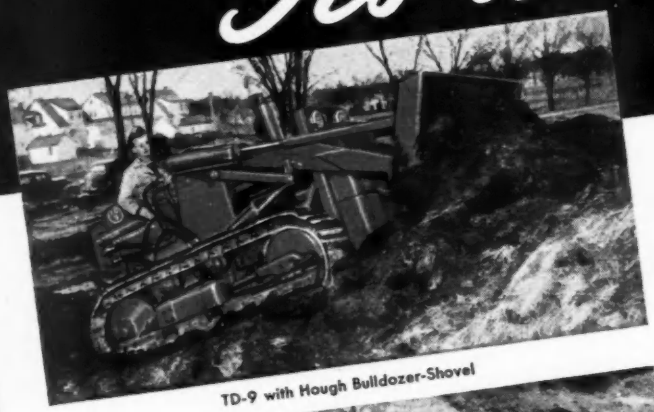
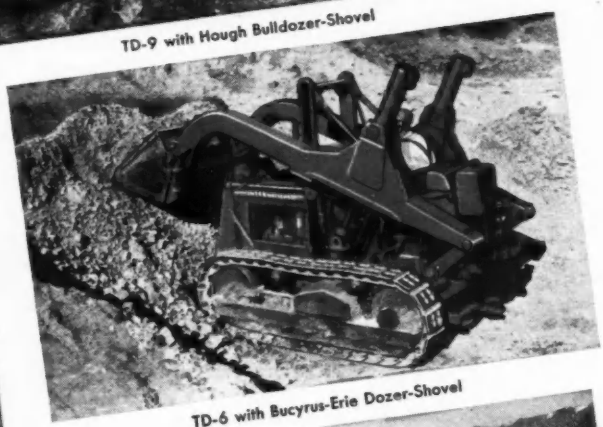
TD-18 with Bucyrus-Erie Hydraulic Bullgrader



TD-9 with Hough Bulldozer-Shovel



TD-6 with Bucyrus-Erie Dozer-Shovel

TD-18 with Isaacson Kable Trac-dozer

TD-18 with Bucyrus-Erie Cable Bullgrader

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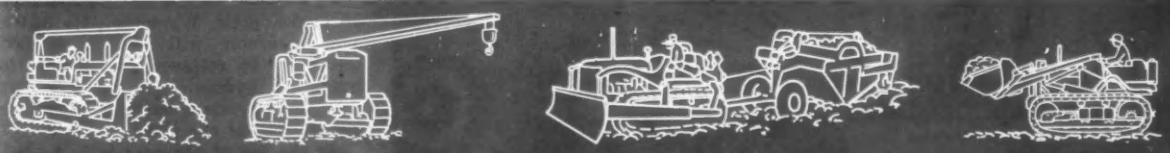


(Continued from page 623)

ing materials will not be reduced in as great a proportion as the general run of commodities. There has, he stated, been a smaller increase in the cost of construction materials than in such items as corn, hogs, wheat and cattle between April, 1939 and April, 1947.

Another Round of Increases

Mr. Ward explained that a year ago many materials were difficult to obtain because the price at which they could be sold was not high enough to induce a producer to supply the needs of the industry. Since then, factory wages have gone up and another round of increases has begun.

"It is improbable that building material prices will be reduced to any great extent except for brief periods of distress selling in certain fields where there may have been over-stocking," he stated.

"The peak in building cost has just about been reached. We should expect to stabilize costs as of January 1, 1947, with the further thought that there is always a fluctuation in such costs that might run 5 per cent in either direction from such a level."

Appoint A. C. Leonard to New Public Roads Post

Appointment of A. C. Leonard, of Rochester, Minn., as chief of the secondary-roads division of the Public Roads Administration has been announced by Thomas H. McDonald, Commissioner of the Public Roads Administration, Federal Works Agency.

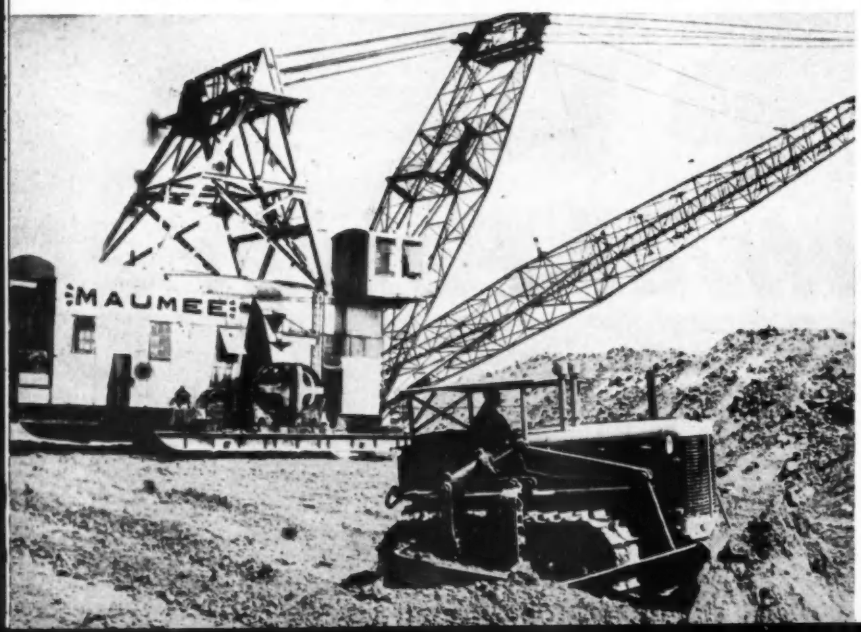
A native of Watertown, S. D., Mr. Leonard has served during the past 19 years as highway engineer for Olmsted County, Minnesota. For five years prior to 1928 he was employed as assistant engineer in the Minnesota State Highway Department at St. Paul. He received his degree in Civil Engineering from the University of Minnesota in 1923.

Mr. Leonard will have staff responsibility for activities connected with the Federal-aid secondary road program, under the general supervision of Public Roads Deputy Commissioner H. E. Hilts, whose office has performed these duties in the past.

In addition to his duties as county highway engineer, Mr. Leonard served as engineer for the Olmsted County Planning Commission. He is a past president of the Minnesota Chapter of the National Society of Professional Engineers and the Minnesota Association of County Highway Engineers, a member of the board of directors of the Minnesota Good Roads Association, and a member of Public Roads' Board of Consultants on Secondary Federal-aid Highways, representing Minnesota, North Dakota, South Dakota and Wisconsin. The board consists of one county engineer or administrator from each of the 11 field divisions of the Public Roads Administration.

• An explosion-mat's-eye-view of Delma Engineering Corporation's 40 Lorain ¾-yd. clamshell-crane at work on the Abraham Lincoln Homes, a New York City project on East 130th Street running to 135th Street through Fifth and Madison avenues.

• Dressing a road for the 13-yd. stripper in the background is this Allis-Chalmers HD-14 tractor. Both units are working in the Maumee Collieries strip mine near Dugger, Indiana, where 70 feet of overburden must be removed to uncover the coal. The dragline is a Bucyrus-Erie 15-W with 215-ft. boom.



M-K Gets $14 Million Contract for Boysen Dam

An award of a $13,900,000 contract has been made for construction of the Boysen Dam on the Big Horn River in north-central Wyoming, the first Reclamation job to go forward under the President's 1948 fiscal year program to expedite Missouri River Basin flood control. The contract for building the main dam structure, and hydroelectric power plant and the relocation of a railroad, went to the Morrison-Knudsen Company of Boise, Idaho. The company's bid was more than $2,500,000 lower than that of the next competitor for the job.

Terms call for the contractor to get work under way within 30 days after notice to proceed and to complete the job within a little over four years.

Multiple-Purpose Structure

The huge earth-filled structure, to be about 150 feet high and 1,100 feet long at the crest, will impound the Big Horn's waters at a point 18 miles south of Thermopolis, Wyoming. Its 31,000-acre reservoir will hold back flood waters to be released as required for irrigation, hydroelectric power generation and provide a basin to reduce the silt content of the river.

At the toe of the dam is to be built a hydroelectric power plant with two

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Your continued support in promoting the Payroll Savings Plan will help "America's partnership" this year to repeat or surpass last year's four-star performance, in which sales of Savings Bonds were 7½ billion dollars—*exceeding redemptions by far more than a billion!*

So keep up the splendid work—keep on telling and selling your employees the advantages of Payroll Savings: (1) ease; (2) regularity; (3) safety of investment; (4) security for the individual and the nation; (5) $4 for every $3 at maturity! And, remember, people with a stake in the future are the most stable, most productive employees.

For any help you need in conducting the Plan, call on your State Director of the Treasury Department's Savings Bonds Division.

New Savings Bonds Plan won't affect the P.S.P.

THE Treasury Department and the banks of America are making it possible for farmers, doctors, and other self-employed people to participate in "automatic" Bond buying by special arrangement with their banks. This extension of the Savings Bonds program is not a partial payment plan and is intended *only* for people who are not in a position to take advantage of the Payroll Savings Plan.

The Treasury Department acknowledges with appreciation the publication of this message by

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7,500 kilowatt generators to turn out urgently needed electrical energy for the wide area served by the Bureau of Reclamation's Colorado-Wyoming power distribution system.

Boysen will serve in immediate coordination with two other Reclamation Dams, the Moorhead Dam on the Powder River and the Mission Dam on the Upper Yellowstone, as key structures for holding back the waters of the Yellowstone and its tributaries. Losses from floods in the area to be benefited by these dams have aggregated nearly $1,000,000 so far this year.

Moorhead Dam is expected to go under construction this year, along with the other 11 new Reclamation Dams to be started under the expedited and regular parts of the Missouri River development program. The Bureau of Reclamation now has no funds to begin construction of the Mission Dam, but it is anticipated that an appropriation will be sought for the work to begin on it in the 1949 fiscal year.

The work to be done under the Boysen Dam contract awarded to the Morrison-Knudsen Company includes construction of the dam structure, power plant, and the relocation of about 14 miles of tracks of the Chicago, Burlington & Quincy Railroad, which now cut through part of the area to be flooded by the reservoir.

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Construction of Turnpike Extension to Start Next Year Says Penn. Governor

Actual construction of the Philadelphia extension of the Pennsylvania Turnpike, which now links Harrisburg and Pittsburgh, will be started next year, barring unforeseen difficulties, according to a recent announcement by Gov. James H. Duff.

Governor Duff said that preliminary aerial surveys already had been made of three alternate routes from the present eastern terminus near Carlisle.

He disclosed that the Philadelphia link would extend to a point east of Paoli "near the Lancaster Pike (Lincoln Highway), Montgomery Ave., Conshohocken Pike and the Doylestown-New Hope road, these being Routes 23, 123, 30, 202 and 320."

Part of Coordinated Plan

The turnpike, he said, would be integrated with all other traffic arteries in the Philadelphia area and the combined road program would result in a "complete, comprehensive, coordinated traffic plan for Philadelphia." Pennsylvania's State Highway Department will plan separately to develop interlocking projects.

Announcement of the overall plan was made by Governor Duff after conferring with members of the Pennsylvania Turnpike Commission about both the Philadelphia extension and a proposed extension from the western terminus to the Ohio state line.

The governor said the eastern extension would be undertaken first because the state already is doing extensive highway work in the Pittsburgh area.

"I am enthusiastic about the possibility of getting real action on the Philadelphia extension," he declared. "It is not something for the future. We are going to get actual construction started in 1948. We will aggressively follow up with the Pittsburgh end."

Terming the turnpike program a "must," Governor Duff said: "This has to be done. It is going to put Pennsylvania in the forefront of the national highway system."

To Be Privately Financed

He explained that the turnpike extension project would be privately financed through revenue bonds to be amortized by tolls and would not interfere in any way with the state's general highway program.

"It will fit in with the national transcontinental highway program," he said. "Pennsylvania will have its system completed when the other states are just getting ready.

"I am absolutely sure that the turnpike extensions can be financed without any subsidies from the commonwealth. They will not take any money whatever from the general highway program, and the projects will not cut down on our general highway program."

(Continued on page 634)

The World's *Largest Most Powerful* Bulldozer

Here's a sensational combination — the largest tractor ever built engineered into Baker Bulldozers — to give you more traction, more power, more weight, more work capacity than ever before.

The HD-19 Baker Bulldozer with Torque Converter Drive provides unlimited operating speeds with a minimum of gear shifting — operating speeds that are automatically geared to load conditions for maximum efficiency. Over 48,000 pounds of weight provide "slip-proof" traction in all weather and ground conditions. Big 11'-1" x 4' moldboards roll mountains of earth and rock to pile up yardage in record breaking time.

Again Baker sets the pace with both *cable* and *hydraulic* Bulldozers *and* Grade-builders, each specifically engineered into the Allis-Chalmers HD-19. If it's low cost yardage — smashing power — continuous operation you're after, tackle your next job with an HD-19 and Baker 'Dozer — it's the greatest team on earth.

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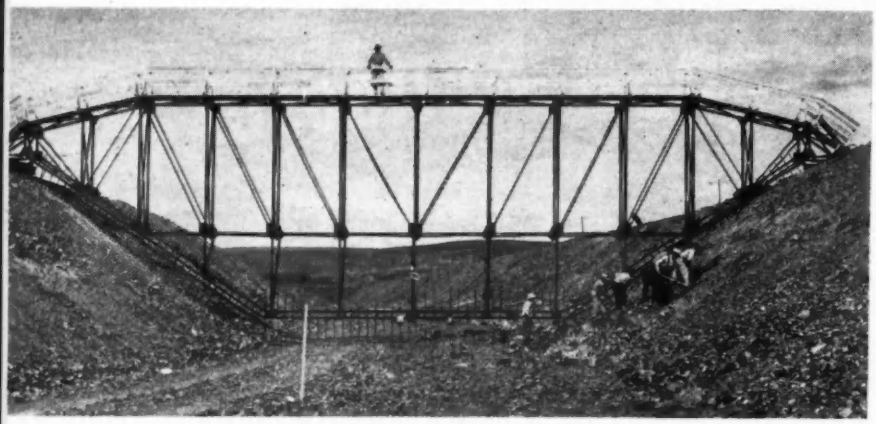


• This whisker jumbo is being used by the Utah Construction Company and Winston Brothers as a template in fine-grading the west canal of the Columbia Basin Project in Eastern Washington. The canal at this point is 38 feet wide at the bottom. The same rails on which this jumbo moves will also be used by the concrete lining machine.

Shots

(Continued from page 628)

Noting that gross earnings on the present turnpike are running close to $500,000 monthly, Governor Duff said the new extensions would be both self-supporting and self-liquidating.

"I have just had a conference with the Turnpike Commission and their engineers," he announced, "and I am assured that, in the absence of unforeseeable difficulties, work can be commenced some time next year.

Will Avoid Farm Lands

"I am further advised that this road can and will be built without using the fertile farm lands in the eastern part of the state and that the alignment and grade will be even better than those of the present turnpike.

"By extending the turnpike, the primary and secondary highway systems of the commonwealth will be greatly benefitted. At the present rate of increase of traffic, all highway facilities of the commonwealth will be taxed to the utmost to provide proper access for the greatly mounting automobile traffic."

Estimate $60 Million Cost

Cost estimates of the proposed turnpike extensions at current prices have not been announced, although a private analysis made last year indicated it would be necessary to raise at least $60,000,000 for the Philadelphia extension. The present 160-mile section of the turnpike was built at a cost of $71.-500,000, of which $29,250,000 was obtained through a PWA grant.

Pennsylvania's legislature this year enacted a measure authorizing combination for financing purposes of the present turnpike and the proposed extensions. The act authorizes issuance of consolidated revenue bonds, to be amortized by tolls, for such construction purposes.

West Virginia's New Road Head is Ray Cavendish

Appointment of Ray Cavendish as West Virginia state road commissioner has been announced by Gov. Clarence W. Meadows.

Cavendish, who was moved up from chief maintenance engineer for the State Road Commission, succeeds E. L. Worthington, who resigned after 25 years of service with the state to accept the position of chief engineer of roads for the reconstruction section of the American aid mission to Greece.

Born in Fayette County in 1900, the new commissioner has been with the West Virginia commission continuously since 1933. Before that he worked for the commission for two years and for the Kanawha County engineering department for 12 years. He is a registered professional engineer, civil and structural grades; a member of the American Society of Civil Engineers, the American Road Builders Association, and the equipment and maintenance committee of the American Association of State Highway Officials.

Diver Finishes Excavation for New Carborundum Bldg.

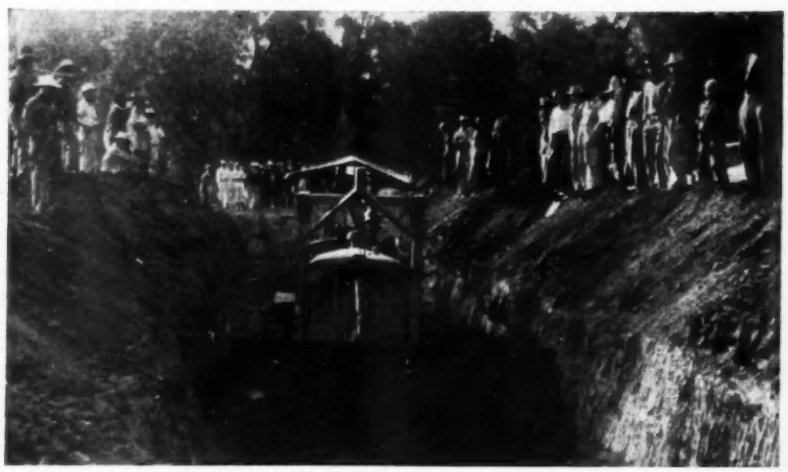
A diver, acting as an underwater construction worker, has just completed his part of the ground, or rather water, work for a million and a quarter dollar maintenance building for The Carborundum Company now under construction at Niagara Falls, N. Y., by the Turner Construction Company. A water level three feet below the ground on which the two-story industrial building, 320 feet by 240 feet, is to be erected, and the Niagara River 150 feet away ready to pour its waters into the excavation, made this unusual amphibious type of construction necessary.

The diver's job was to assist in completing the excavations and setting the forms for the 75 concrete footings which extend 12 to 14 below the surface of the ground and support the building. The land on which the building is being constructed was filled in with rock taken from hydroelectric power tunnels leading to the river, and the bedrock on which the building must be based is therefore 10 to 12 feet below the surface of the ground.

Cleaned with Pressure Blower

A clamshell bucket was used to dig out the top layers of porous rock. The diver, David Regan of Buffalo, equipped with helmet and diving suit, then climbed down into each water-filled excavation and with a pressure blower, which resembles an ice pick connected to a hose through which air is forced under pressure, cleaned the excavations of

• Near Mexico City, Mexico, a Caterpillar D8 tractor with Le Tourneau bulldozer excavates a trench for burial of diseased livestock as the animal's owners watch with sorrowful faces. President Miguel Aleman has thrown his full weight behind the present program of extermination of thousands of cattle, swine, sheep and goats infected with hoof and mouth disease—this being the only known means of stamping out the malady. The farmers are being given mules to help maintain crop production. Authenticated News photo.



all soft rock which was carried to the surface in pails.

When a sounding indicated that bedrock had been reached, the diver placed the metal forms for the concrete in place under water and the concrete was poured into them with a tremie chute.

Mr. Regan worked eight hours a day under water and did the entire diving job on the 75 footings single handed. He says a diver must be able to do many construction jobs and do them in the dark. He usually works without a flashlight and depends, like a blind man, on a highly developed sense of touch. A helper, called a tender, whose full time job is to look after Mr. Regan's safety, helps him in and out of his diving suit, hauls him up from the bottom, and keeps his eye on the all-important air line.

Diving in about ten feet of water might appear unusually easy for a deep sea diver, but actually Mr. Regan explained that shallow water makes the work harder. The water pressure is not great enough at that depth to lighten the weight of objects and moving about in a heavy diving outfit becomes more difficult.

New Construction in August Up 15% Over Last Year

New construction put in place during August 1947 had an estimated value of $1,212 million, a more than seasonal gain of over 5 per cent from the revised July estimate of $1,153 million according to the Construction Division, Department of Commerce. The August figure also represents a gain of nearly 15 per cent over the volume of new construction put in place in August 1946.

Total new construction during the first 8 months of this year is estimated at $7,721 million, compared with $5,862 million in the same period of 1946, an increase of nearly 32 per cent.

Private Construction Figures

Total private construction in August, estimated at $909 million, was more than 5 per cent above the July figure of $865 million, a considerably more than seasonal gain for this category. Of this total, private residential construction (exclusive of farm) at $443 million represents an increase of more than 5 per cent over the July figure of $421 million, a more than seasonal gain. August private nonresidential construction was $266 million, compared with $261 million in July, representing the usual seasonal gain.

Privately financed public utility construction in August totaled $125 million, a usual seasonal gain from the $123 million July estimate.

Public Construction Gains 5%

Total public construction in August is estimated at $303 million, compared with $288 million in July, a more than seasonal gain of over 5 per cent. Of this total, public residential construction accounted for $10 million, compared with $8 million in July. Public nonresidential building totaled $46 million, compared with $44 million in July.

August public highway construction, estimated at $135 million, a gain over the July figure of $130 million. Sewer and water construction totaled $26 million in August, the same as in July. New conservation and development construction in August totaled $46 million, a gain of more than 9 per cent over July.

Sewers: Harrison, N. Y. Lost One; Memphis, Tenn., Found

In Harrison, city officials looked up from yellow documents, scratched their heads and ruefully admitted it . . . 752 feet of sewer line had "disappeared" from under the community's streets.

The sewer in question has appeared on city maps since 1913 when it reputedly was installed. Sturdy manhole covers lined the route in tangible evidence of the sewer's existence. The mystery developed when a house was built on the street. Men began excavating for the sewer. No sewer. They crawled down a near-by storm sewer manhole. It was a dummy.

That someone in Memphis purloined Harrison's missing sewer is not insinuated but city engineers in the Tennessee city recently found one right downtown that they didn't even know about.

Found Old Clay Pipe Sewer

It all happened when one of the city's department stores making repairs to its air-conditioning system, ran into what appeared to be an uncharted sewer sys-

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tem. Further investigation disclosed the presence of an old vitrified clay sewer which apparently had been laid shortly after the Civil War and had been functioning unnoticed ever since.

Memphis built its first public sewer system after the yellow fever epidemic back in the 1870's and some of these vitrified clay pipe sewers are still in operation. Back in those days rights-of-way and recordings of title were considered bits of red tape not to be messed with, which is one reason, city engineers claim, why the locations of some of the old sewers are unknown even though they still go about their daily job of carrying waste.

Compare Interstate Road Program to That of 1919

The Interstate Highway program recently announced in Washington has much the same objective as two earlier Federal-aid highway efforts of the Government, according to the National Highway Users Conference.

As after the first World War, when Federal highway aid made its first extensive beginning, the goal is to make travel easier for everybody and to knit the nation more closely together for commerce as well as defense by means of better highways.

National Aid Begun in 1919

The joint congressional committee which in 1915 called for a policy of Federal aid to the good-roads movement —a policy which was well embodied in law by 1919—predicted that cooperation of the Government and states in building roads would make American highways the best in the world. At that time, France was a claimant for that distinction, with many miles of hard-surfaced roads.

• The city of Farmington, N. H., maintains 70 miles of farm-to-market roads with this Goodyear-tired Caterpillar patrol grader. The unit is used to widen, crown, and smooth the road in one operation.

The 1915 committee predicted better than it suspected, perhaps, when it said that such a highway system would "lighten the labor of American horses and save wear and tear on harness and wagons."

Other predictions made by the committee have been borne out with equal but less devasting accuracy. For instance, the committee said that good highways would "bring remote agricultural lands within practicable hauling distance from railroads, materially raise the value of farm property, enhance the margin of profit on farm products, vastly increase the average daily attendance at rural schools, raise the standard of rural education, and make the motor truck an economical vehicle for American farmers."

Nation Then "in the Mud"

At the time the committee made its report rural America still was largely "in the mud." So the committee thought it wise to remark that its "suggestion as to the use of rural roads by commercial auto trucks and buses is not merely a product of imagination. In several instances gasoline-propelled buses are now competing successfully with city or interurban electric lines and where the haul is but a few miles, transportation of freight by auto truck is found cheaper and more satisfactory than by rail."

While the 1915 report marked the beginning of extensive Federal interest in highways, the first Federal participation began more than a century before. Congress' first appropriation of highway funds was for the Cumberland Road, connecting the Ohio valley with the eastern seaboard. Eventually, this mountain-spanning road was taken over by the states, and still later it degenerated into a series of privately-owned toll roads.

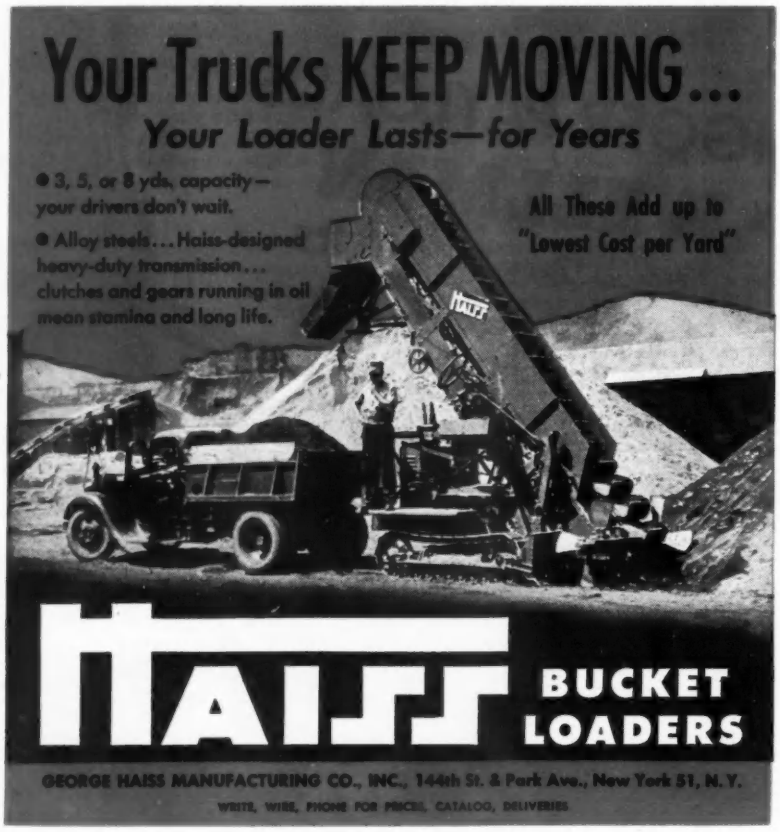
New System is Contrast

A great contrast to this beginning is supplied by the Interstate System of highways, on which routes have now been announced. While the Cumberland Road appropriations by Congress over a period of 40 years totalled less than $7,000,000, the cost of improving and building roads for the 40,000 mile Interstate network will go into the billions. Of these funds the states will probably pay about half, the national Government the rest.

The Interstate System will be made up of both old and new highways, with the older ones improved to high standards. When completed, these highways and streets are expected to serve 20 per cent of the nation's traffic, while making up but one hundredth of the nation's total road mileage.

Vehicle Registrations to Surpass Previous Peak

With traffic congestion already a major problem, the number of motor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vehicles rolling over the Nation's highways by the end of the year will break all previous records, according to figures compiled by the Public Roads Administration of the Federal Works Agency from reports submitted by state authorities.

The estimated total of motor vehicle registrations in 1947 will soar to an all-time high of 37,164,000, surpassing 1946 registrations by more than 3,218,000 and exceeding registrations in 1941, the previous peak year, by approximately 2,690,000. This represents an increase of 9½ per cent over 1946 registrations and 7-8/10 per cent over the 1941 total.

The number of automobiles registered during the year is expected to reach a total of 30,545,000, as compared with 28,100,188 automobile registrations in 1946 and 29,524,101 in 1941.

Truck registrations in 1947 will climb to an estimated 6,492,000 by the end of the year, an increase of 13.4 per cent over the 1946 total of 5,725,692 registrations, and 33.6 per cent more than the 4,859,244 trucks registered in 1941. The percentage of increase in truck registrations is higher than that in any other class of motor vehicles.

Cut-off Wall at Long Lake Dam 95% Complete

The Columbia Basin Project's Long Lake Dam near Stratford, Wash., is going up—after months of going down.

• Among Erwin Wyse's equipment being used on a small remodeling job for Weghorst & Iott Frozen Food Lockers at Dundee, Michigan, is this Allis-Chalmers HD-5 tractor with Tracto-Shovel shown loading to a Ford truck.

Contractor J. A. Terteling of Boise, Idaho, has started building up the earth-fill dam around a concrete cut-off wall, after excavating to bedrock.

He is compacting moistened earth, layer upon layer, to form the core of the dam. This zone 1 material consists mostly of clay and is impervious to water. It will be flanked by layers of sand and gravel. Outer slopes of the dam will be covered with large rocks for protection against water and wind erosion.

Bottom-dump trucks of 16-cubic yard capacity, other trucks holding up to 12 cubic yards, and tractor-drawn sheepsfoot rollers are used in the backfilling and compacting operations.

The cut-off wall, designed to prevent seepage, is 95 percent complete. The last 150-foot section is under construction at the base of the east abutment of the 1,900-foot dam. The concrete wall averages about five feet in height, but is 30 feet high in one deep crevice in the bedrock. The wall tapers from 14 inches in width at the bottom to 9 inches at the top. It rests on a concrete footing extending 3½ feet into bedrock.

When Terteling gets through going up, Long Lake Dam will be 111 feet above the natural ground surface and 135 feet above lowest bedrock, according to Philip M. Noble, resident engineer for the Bureau of Reclamation.

The structure, now 22 percent complete, will form a 5½-mile lake which will serve as part of the Main Canal for the Columbia Basin Project's gigantic irrigation system.

C. & O. Holes Through New Half-Mile Tunnel in W. Va.

Completion after nearly a year's work of the boring of the Chesapeake and Ohio Railway's newest and longest double track tunnel, being constructed on its main lines at Fort Spring, W. Va., has been announced by the C. & O. Bored from both ends through limestone containing clay seams which made drilling and blasting difficult, the new tunnel is approximately 2,700 feet long portal to portal.

The project, including relocation of tracks extending beyond the tunnel, totals 1.09 miles and shortens the C. & O. main lines by 3,600 feet. It reduces a 303-degree curvature, obviates a 35-mile slow order at this point and is expected to result in a saving of $80,000 a year in operating expenses.

Besides reducing running times, elimination of the curve will afford passengers greater comfort, it was pointed out.

Drilled 135 Holes in Face

Construction work was begun at the west portal on March 26, 1946, and at the east portal June 1, 1946. Steel ribs to support the tunnel roofs were placed as the excavation progressed. To move the solid rock, about 135 holes were drilled to a depth of 15 feet and shot every 24-hour cycle. Each blast advanced the tunnel approximately 12 feet.

Upon completion of the boring, work was started immediately on the lining of the completed tunnel section with concrete. The tunnel will have a maximum width of 32 feet, maximum height of 26 feet, six inches, above the top of the rails.

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$20 Million is Tentative Virginia Road Allocation

The Virginia State Highway Commission, in regular session August 26 at Big Stone Gap, Va., posted tentative allocations totaling $20,000,000 for construction on the State's primary system of highways during the fiscal year 1948-49.

Based on estimated revenues for the year, the amount was nearly $2,500,000 more than that allocated for primary construction during the current year. The Commission emphasized, however, that "we have less than ten cents for every dollar necessary to meet immediate needs."

Public hearings have been scheduled on the tentative allocations and under Virginia procedure the allocations will not be made final until the public has an opportunity to speak and make recommendations for change.

Primary construction funds go for the improvement and reconstruction of some 9,000 miles of primary highway in Virginia. The 38,000 miles secondary system, also under State administration, is financed from different allocations.

Under Virginia's method of allocating primary road funds, each of the eight construction districts gets a sum determined under a factor method of distribution. Each district's sum is allocated to various projects within the district. Most of the work will be let to contract after competitive bids are received.

Survey Shows Progress of U. S. Superhighway Plans

By Bethune Jones

Although generally opposed by highway user organizations and the Federal Public Roads Administration, bills providing authority for the construction of toll-financed superhighways were enacted this year by a number of state legislatures, a survey reveals.

An act to facilitate financing of east and west extension of the Pennsylvania Turnpike, now linking Pittsburgh and Harrisburg, was passed by the Pennsylvania legislature. The new measure authorizes combination of the present 160-mile all-weather toll highway, a proposed extension to Philadelphia and a proposed link to the Ohio state line, for financing purposes. Recently signed by Gov. James H. Duff, the measure authorizes issuance of consolidated revenue bonds, to be amortized by tolls, for such construction purposes.

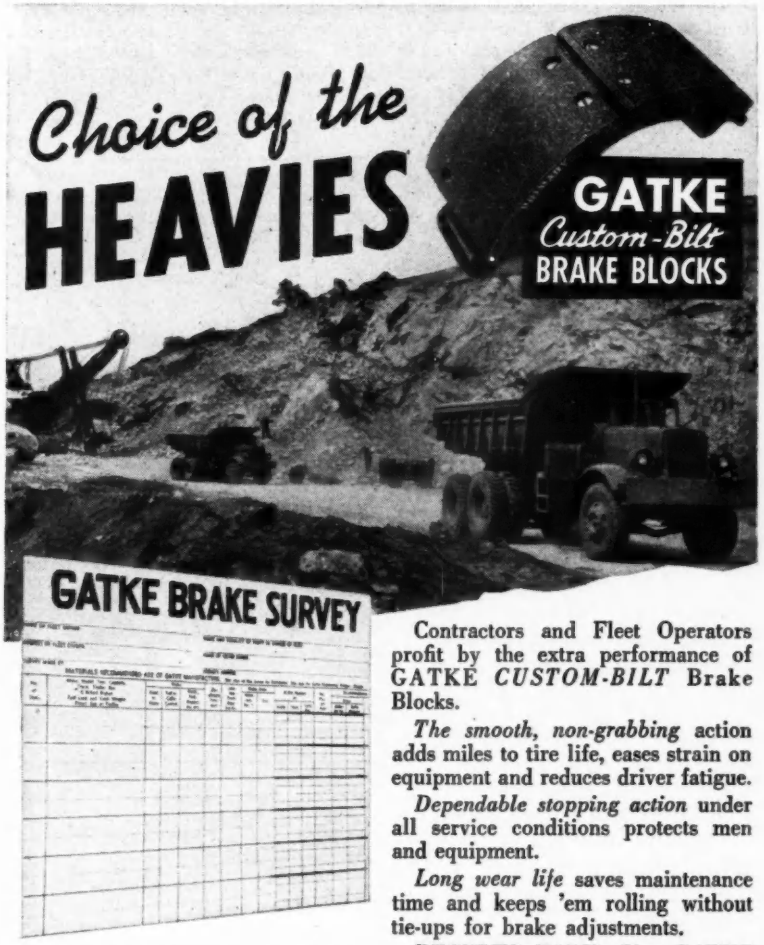
Surveys of the proposed extension to Philadelphia were recently ordered, but cost estimates at current prices were not available at this writing. A private analysis made last year indicated that it would be necessary to raise at least $60,000,000 for the Philadelphia extension.

Also passed by the Pennsylvania legislature but vetoed by Governor Duff was a bill for a four-state commission contemplating extension of the Pennsylvania Turnpike into West Virginia, Ohio and Indiana.

West Virginia's legislature this year enacted a bill providing for appointment of a turnpike commission with authority to build toll-financed superhighways in that state, but similar legislation was defeated in Ohio, where toll road advocates had ambitious plans for a 1,000-mile network of five toll superhighways to cost an estimated total of $560,000,000.

One of the proposed Ohio toll roads would have been designed to connect with the Pennsylvania Turnpike and run across Ohio into Indiana. From there, toll road enthusiasts have pointed out, the toll facilities could cross Indiana, into Illinois to Chicago. Indiana has indicated some interest and Illinois has a State Superhighway with authority to issue revenue bonds for the construction of toll superhighways, but thus far it has taken no action.

Oklahoma's legislature enacted a bill authorizing construction of a toll-financed express highway between Oklahoma City and Tulsa. Estimates of costs of the project cited thus far have varied from $25,000,000 to $50,000,000. Plans are to have the project ready for actual construction within six months, with the prospect of having it completed and opened for traffic within two and a half years. It has been predicted that the revenue bonds



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for the project can be paid off in 21 years from tolls, after which the highway will revert to the state.

A bill enacted in New Hampshire authorized construction of a $7,500,000 toll road along the 18 miles of seacoast connecting Massachusetts and Maine traffic. This project differs from those approved in other states, however, in that it calls for direct state financing instead of private sale of bonds, which drew strong opposition in the legislature.

Colorado's legislature enacted a measure to permit the construction of toll roads. Designed to allow construction of a four-lane superhighway between Denver and Boulder, the bill empowers the State Highway Department to issue revenue bonds which would be retired solely out of toll receipts.

Legislative authority was provided in Maryland for the issuance of revenue bonds for self-liquidating projects, including a Chesapeake Bay bridge, possibly a bridge or tunnel across the Baltimore city harbor, and any other bridges or toll roads that might be devised by the State Roads Commission under proper conditions of traffic.

Georgia's legislature approved a bill to create a Georgia Scenic Highway Authority, empowered to issue revenue bonds for construction of a coastal scenic highway. The Arkansas legislature enacted a measure authorizing construction of a toll highway in Desha County.

Although the authority of the California Toll Bridge Authority was broadened to include approach roads within 50 miles of toll bridges, the California legislature rejected ambitious plans for a network of toll roads. One California plan contemplated a $2,000,000,000 system of toll highways. Toll road plans were strongly opposed by California's Gov. Earl Warren, who said he placed them "in the same category as poll taxes; it would be like going back to the Dark Ages."

Three bills to pave the way for collection of tolls on the Saw Mill River and Hutchinson River Parkways were signed into New York State law by Gov. Thomas E. Dewey.

Killed in the Maine legislature was a bill to limit construction of that state's new toll turnpike to the stretch now being built between Kittery and Portland. Under authority granted by the 1945 Maine legislature, plans call for eventual extension of the toll superhighway from Kittery to Fort Kent at a total cost exceeding $100,000,000. An original issue of $15,000,000 in revenue bonds was sold last year for the unit now under construction, but, to meet rising construction costs, it was found necessary to sell another $5,000,000 in bonds this year.

Florida Says "No"

Florida's legislature defeated a measure proposing construction of an express toll highway from the Georgia line down the East Coast of Florida. Statutory authority for construction and financing of such a toll road already exists in Florida, according to the rejected resolution, which explained its purpose was to "express the will of the legislature."

Rejected in the Connecticut legislature was a bill which would have authorized a toll scenic parkway along the Housatonic River.

Toll road proposals have been strongly opposed by highway user organizations. Arthur C. Butler, director of the National Highway Users Conference, recently charged that this year's crop of toll road proposals was inspired by banking interests rather than by motorists.

In a recent appearance before a Congressional committee to urge repeal of all federal automotive taxes, H. J. Bunnier, president of the American Automobile Association, said that the demand for toll roads that has appeared in many parts of the nation was the result of "the current demoralization" in the automotive tax situation.

"Must Set Houses in Order"

"This cry for toll roads," he declared, "will continue to be heard, with its unfortunate impacts on the future of highway transportation, until the states set their financial houses in order. This cannot be done so long as the federal government and the counties and municipalities are vying with each other to mulct the motor vehicle owner."

Recently reiterating his opposition to toll roads, Commissioner Thomas H. MacDonald of the Federal Public Roads Administration termed them "an inadvisable and expensive expedient" that can afford only a "partial, and a communally unsatisfactory and expen-

(Continued on page 644)

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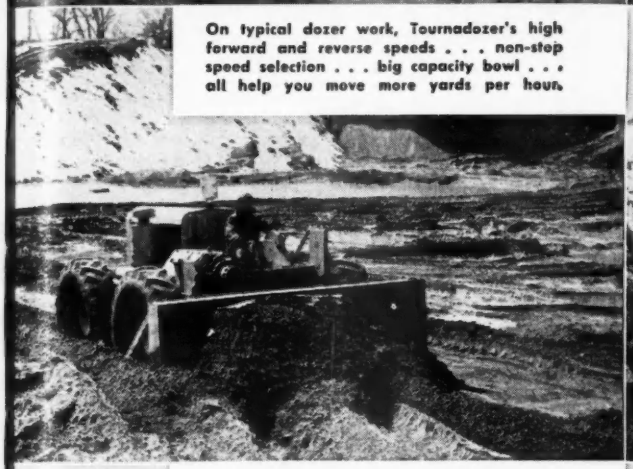

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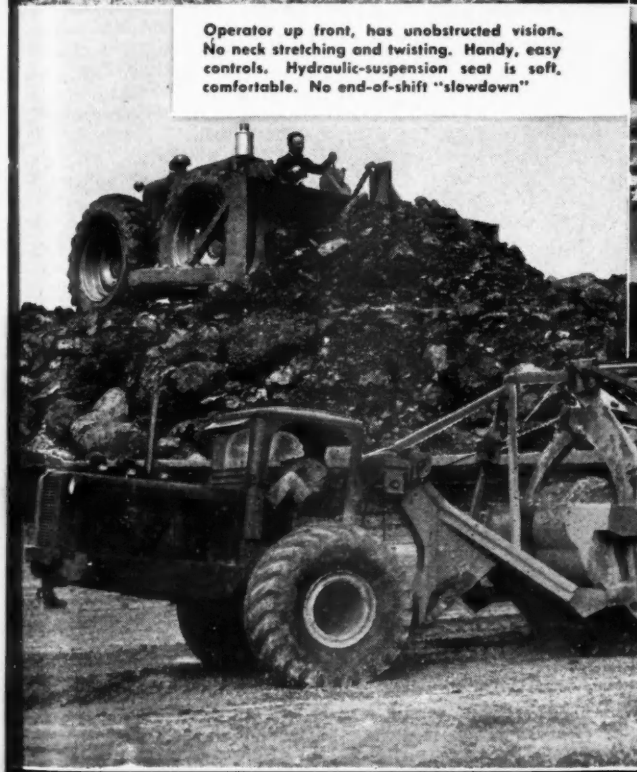
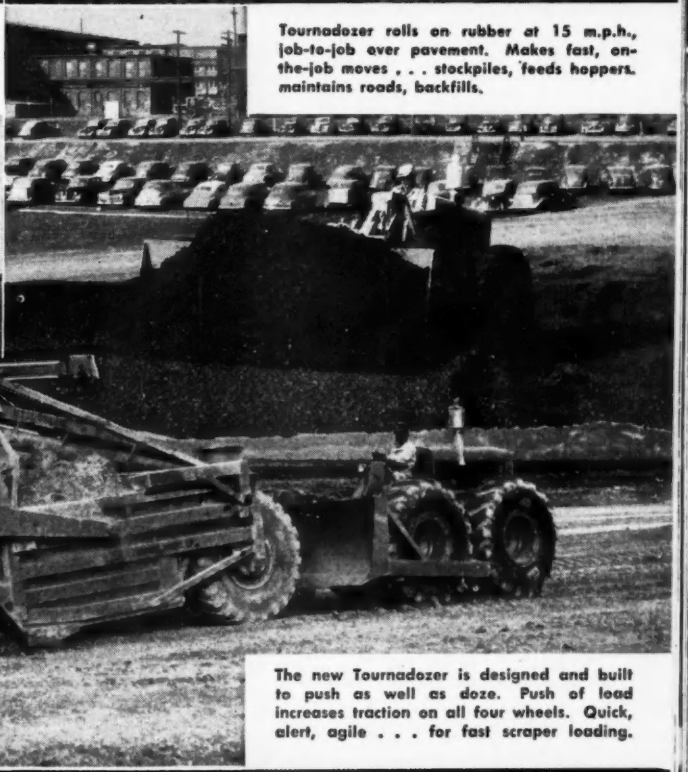


Tournadozer rolls on rubber at 15 m.p.h., job-to-job over pavement. Makes fast, on-the-job moves . . . stockpiles, feeds hoppers, maintains roads, backfills.



The new Tournadozer is designed and built to push as well as doze. Push of load increases traction on all four wheels. Quick, alert, agile . . . for fast scraper loading.

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TOURNADOZERS

Continued from page 640)

sive solution of the traffic problem existing in the area of its location."

"So far as we know," MacDonald replied to a query from a New Hampshire newspaper, "there is no existing toll road (except some short roads built to afford tourist access to mountain tops and coastal resorts) on which earnings have been sufficient to cover all costs of the undertaking."

Explains Turnpike Setup

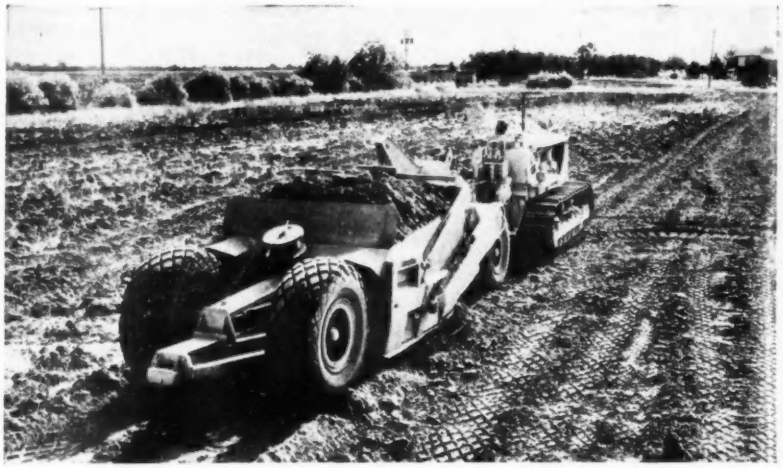
While the Pennsylvania Turnpike is frequently cited as an outstanding example of a successful toll highway and as the model upon which similar projects in other states are proposed, MacDonald pointed out that it is not generally understood that this project "was subsidized by a substantial Public Works Administration grant amounting to $29,250,000 of the original cost of $71,500,000." It has otherwise been noted that since the Pennsylvania Turnpike was constructed the cost of labor, materials and equipment has increased sharply to bring total highway construction costs to more than 50 per cent above prewar levels in many areas.

MacDonald contended that toll roads are expensive because: To attract traffic it must be designed to standards beyond the need of the traffic it will get; existing parallel roads, which toll roads by-pass, would still need to be maintained as free alternate facilities to serve local traffic; it must bear the large cost of toll collection, which other authorities have estimated as adding about 10 per cent to the original cost of a toll project; and interest on toll road bonds is inevitably higher than on mony borrowed for regular highway financing.

A passenger car rate of 1 cent a mile, generally depended upon in most toll road proposals, MacDonald said, is equivalent to a gasoline tax rate of 12 to 16 cents a gallon.

Besides the toll road proposals advanced in state legislatures, bills for national networks of toll superhighways perennially make their appearance in Congress. One such measure introduced in Congress this year called for the creation of an agency known as the Streamlined Highway Corporation with the power to issue bonds in the amount of $12,000,000,000 to finance a system of six transcontinental toll roads.

Another Congressional proposal would permit federal-aid highway funds to be used widely for the construction of toll roads—a procedure which has been expressly prohibited under the federal-aid highway law since 1921.



• In order to obtain maximum effectiveness from his irrigation system, Visalia, (Calif.), farmer H. A. Collin, Jr., is having his farm land releveled. The work is being done by J. E. Langley with his Goodyear tire-equipped Caterpillar D7 tractor and 70 scraper combination.

U. S. Expert to Help Restore Irrigation in Greece

William E. Corfitzen of the Bureau of Reclamation will be irrigation adviser in rehabilitation of irrigation works on 800,000 acres of farmlands in northern Greece, as part of the American Mission for Aid to Greece, according to Commissioner of Reclamation Michael W. Straus. Corfitzen, special representative of the Commissioner, has been loaned to the State Department for one year for this purpose.

"Rehabilitation of the irrigated areas of Greece will help materially in restoring the food-production capacity of this country," Mr. Straus pointed out. "The war damage in Greece and incidental deterioration of canals, headworks and turnout structures has been tremendous. Restoration of the efficiency of these works will be a distinct boon to Greece's self-support."

Mr. Corfitzen's task will be to expedite the reconstruction. The goal is full restoration by June 1948.

Has Been Liaison Officer

In recent years, Mr. Corfitzen has been principal liaison officer for the Bureau of Reclamation with irrigation officials of 31 foreign nations which have called upon United States counsel and aid in developing their own agricultural resources through irrigation. This aid has involved the exchange of technical data, receiving of foreign irrigation officials, providing in-service training for foreign engineers in Bureau of Reclamation projects and performing irrigation and multiple-purpose investigations and designs for several nations.—Among the latter was a $500,000 contract with China for planning and designing the two-billion-dollar Yangtze River project.

Scores of irrigation engineers from 16 different countries in the last several years have received on-the-job

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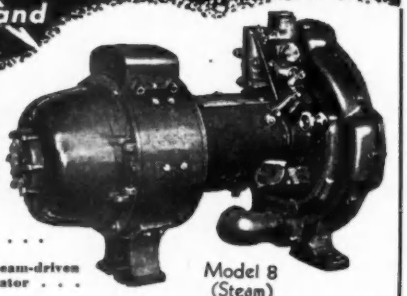

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Send in your old Moon generators for rebuilding now—we can give prompt service.

training with the Bureau of Reclamation. These engineers, paid by their own governments while working for the Bureau of Reclamation, perform regularly assigned tasks. Arrangements for such training are made through the State Department.

The program in Greece is designed to restore to full usefulness the lands in Macedonia and Thrace which have been irrigated for many years, and which supply a principal part of the food grown in Greece.

Eight States Adopt Higher Gasoline Taxes

In a trend likely to intensify as postwar highway construction progresses, increased gasoline tax rates were proposed this year in 35 states, enacted into law by the legislatures of eight states, and vetoed in one state.

A survey of current-year legislative developments in the states reveals that higher gasoline taxes were put into effect in Rhode Island, Maine, Connecticut, Vermont, Colorado, California, Maryland and Nevada, while such a measure was passed but vetoed in Michigan.

States in which gasoline tax rate boosts were proposed but not enacted included Arkansas, Alabama, Delaware, Indiana, Montana, New Mexico, North Dakota, Utah, Washington, West Virginia, Wyoming, Florida, Illinois, Massachusetts, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Oregon and Wisconsin.

Although proposed in a few instances for such nonhighway purposes as education and soldiers' bonus programs, the general aim of such measures was to obtain additional revenue for state and local road building. The fact that currently available road funds had not yet been spent, due to delays in getting postwar construction under way, was cited in opposition to the tax increase bills in many states. The measures also were sidetracked in a number of instances pending the completion of long-range surveys to determine construction needs more completely.

The proposals also would have been more widely enacted had it not been for the fact that receipts from present gasoline tax rates have been running far ahead of previous anticipations, strengthening arguments that tax increases should be deferred until the need is more apparent.

Despite these factors and the Congressional enactment of a bill extending for a year the time limit on availability of funds authorized under the Federal-Aid Highway Act of 1944, drums are still beating for higher gasoline tax rates in many states and indications are that the issue will be raised on a wide front in the years immediately ahead.

Aside from pressure for additional revenue for state highway construction, many of the tax increases proposals this year were based on demands of cities and counties for a greater share of state gasoline tax receipts. County and municipal officials in many states have recently made it plain that they intend to continue their efforts in this direction.

Both state and local officials are confronted with the problem of sharply increased highway construction and maintenance costs, with the future trend in the cost of materials, equipment and labor certain to have a pronounced effect on the level of gasoline tax rates and other tax sources supporting highways and streets.

Among the tax rate boosts which went into effect this year, California's legislature approved an increase of 1½ cents a gallon in the state levy on gasoline and diesel fuel, bringing the total tax to 4½ cents a gallon. The measure was one of several automotive tax increases enacted to provide for an expanded highway construction program. It was estimated that the legislation would assure $91,000,000 during the next year and $990,000,000 over a decade, including $786,000,000 for state highways and $204,000,000 for city streets and county roads.

Colorado's gasoline tax rate was boosted from 4 to 6 cents a gallon, to bring in an additional $5,000,000 annually for state and county highway construction. In signing the bill, Gov. W. Lee Knous termed it "one of the most important pieces of legislation in years affecting the over-all development of Colorado."

A 2-cent increase, from 4 to 6 cents a gallon, also was enacted in Maine. The measure is expected to produce an estimated additional $3,500,000 a year for state highway purposes.

Rhode Island's gasoline tax rate was jumped from 3 to 4 cents a gallon. The increase was included in an omnibus tax bill, including several other revenue-raising measures, designed to raise a total of $12,280,000 a year.

A similar increase, from 3 to 4 cents, was enacted in Connecticut. It was estimated that the 1-cent boost will produce about $8,000,000 additional revenue in the next two years, to be used in matching federal funds for highway construction.

Maryland Tax is 6c

Maryland's gasoline tax rate was increased a cent, making a total levy of 6 cents a gallon, as part of a program to provide additional revenue for state and local highway construction.

A ½-cent increase was enacted in Vermont, bringing the total tax to 4½ cents a gallon, to yield from $600,000 to $700,000 additional revenue to help the state match federal highway-aid funds.

Nevada's legislature enacted a measure authorizing a gasoline tax increase of 1½ cents per gallon with the proceeds payable to counties. Under the measure, counties were permitted to decline to levy the tax by adoption of a

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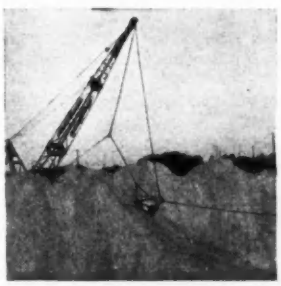
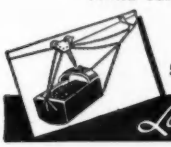
One man controls entire operation and it's easy work. Installation, maintenance and operation costs are surprisingly small.



This picture shows how a boom dragline can be used as a mobile power unit to operate a Sauerman Scraper bucket. A 10,000,000 gal. circular reservoir was dug quickly and cheaply by rigging a 300-ft. slackline cable from the tip of the boom and suspending a Sauerman Crescent bucket from a carrier running on this cable.

Write for Illustrated Catalog



SAUERMAN BROS., Inc.

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Long Range Material Handling Machines

• Because many wells near Louisiana, Mo., are inadequate to supply sufficient water for livestock, ponds such as this one are built to act as catchbasins for rain water. This International TD-14 tractor with Bucyrus-Erie bulldozer moved 150 yards of dirt in 1½ hours to increase the capacity of the pond shown to more than five times its former size.

resolution notifying the state of such a decision.

A bill which would have increased Michigan's gasoline tax rate from 3 to 4 cents a gallon was vetoed by Gov. Kim Sigler, who asserted that any new highway revenue taxes should be deferred pending the completion of a survey of Michigan's highway system. The vetoed bill was designed to give counties and cities about $13,000,000 a year for highway maintenance costs. A 2-cent increase, which was proposed earlier but rejected in the legislature, would have provided additional state as well as local highway funds.

New York State's legislature made permanent a 2-cent gasoline tax heretofore levied on a so-called "emergency" basis in addition to the states regular 2-cent gasoline tax. As a result New York State now has a permanent gasoline tax of 4 cents per gallon.

Bills reenacting so-called "temporary" gasoline taxes also were adopted by several other states, including Pennsylvania, Florida, Idaho, Ohio and West Virginia.

Recommend 14-Year Program to Restore N. Y. Highways

A total of $2,000,000,000 must be spent during the next 14 years to make New York State's highways efficient and safe, it was estimated by State Public Works Superintendent Charles H. Sells in a report last month to Gov. Thomas E. Dewey.

Referring to the present efficiency of the New York State highway system as "dangerously low," Sells declared that an average of $143,000,000 must be spent annually until 1960 if the roads are to be made as efficient as they were 17 years ago. "New York State's highway system once ranked among the very best in the nation. That was back in 1930, but today it is different. This once-proud highway system, upon which the state's economy is utterly dependent, has suffered gradual starvation. It is evident to any motorist that many of the state highways are now old, inadequate and worn out."

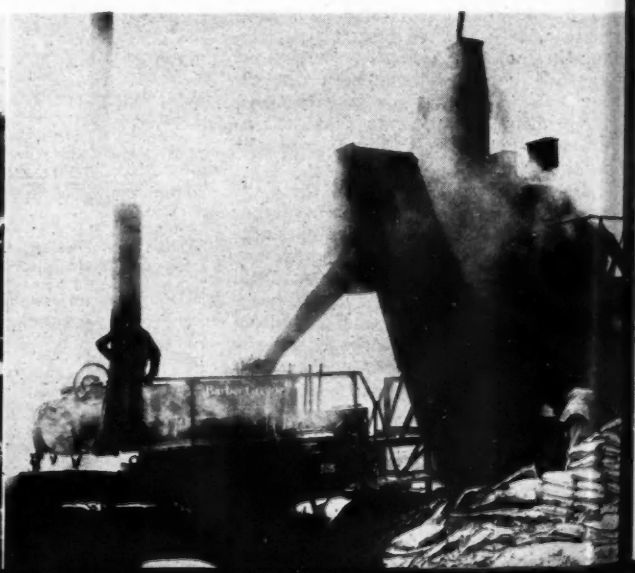
Predicting that within the next 14 years motor vehicle registration in New York State will increase from 2,700,000 to 4,000,000, and motor vehicle miles from 25,000,000,000 to 38,000,000,000, Sells estimated that 1,150 miles of highway a year must be constructed to meet the 1960 goal.

"Present Program Behind Schedule"

Sells, who prepared two years ago the state's present $840,000,000 postwar program for rehabilitation of highways, including a $200,000,000 New York to Buffalo Thruway, said it is a year and a half behind schedule, because of high costs and shortages of equipment and material. That program, he emphasized, is now inadequate.

In estimating the 14-year program's cost, Sells figured on lower costs per mile from 1950 to 1960 than those which now prevail and are expected to prevail to 1949. Those costs are: Reconstruction at existing lane capacity only, $100,000; reconstruction to a high lane capacity, $200,000, and new construction on new rights-of-way, figured higher because they usually represent highways of greater capacity, including expressways, $450,000.

• Memphis Stone and Gravel Company's new Barber-Greene asphalt processing plant is being used in the 8-mile relocation of Tennessee state route 25 between Tishomingo and Inka. Two G.M. 133-h.p. diesel engines provide power to turn out as many as 600 tons of black top a day, loaded direct to Chevrolet 1½-ton trucks (left photo) for hauling to the job. Plant fuel costs are reported to be less than 10c per ton of asphalt produced.



HYSTER

open letter to owners of "Caterpillar" D8, D7 and D6 track-type tractors all over the world: you can get current delivery of a Hystaway for installation on your present or new D8, D7 or D6. Quick mounting: on in 2 hours (2 men); off in 1 hour. Ask your "Caterpillar" distributor about this low investment tractor tool for one-half yd. dragline, clamshell and crane work...write for literature.

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WORLD'S LARGEST MANUFACTURER OF TRACTOR WINCHES

Notes from the manufacturers

H. O. Penn Machinery Company, Incorporated, Long Island, N. Y. announces the addition of the following men to its sales staff: M. J. Vanden Bosch to serve in the New York City coastal area; William Morrison who will cover the Long Island territory; Phil Pierce who will concentrate on the Connecticut, New England coast territory.

Electric Steel Foundry, Portland 10, Oregon, has established an eastern manufacturing plant at Danville, Ill., for the production of the ESCO line of dragline buckets and dippers. The Danville plant is under the supervision of Vincent J. Shanahan, formerly with the foundry in Portland.

John A. Roebling's Sons Company, Trenton 2, New Jersey, has appointed F. G. Hoyt general manager for the company's Woven Wire Fabrics Division. Mr. Hoyt will be assisted by J. Fennell Berger, assistant manager of sales, and F. Clifford Peet, superintendent of production.

C. R. Jahn Company, Chicago, Ill., manufacturer of heavy-duty, low-bed trailers, announces the opening of new sales and executive offices at 1106 West 35th Street, Chicago, Ill.

American Hoist & Derrick Company, St. Paul, Minnesota, has appointed Clifford N. Peterson direct factory representative for the Pacific Coast Area. Mr. Peterson's headquarters will be at San Francisco.

Detroit Diesel Engine Division, General Motors Corporation, Detroit 23, Michigan, announces two new appointments to West Coast Sales positions. Lauren H. Wells has been assigned as sales engineer for the Northern West Coast Zone and will direct industrial, marine, and petroleum distributors sales in that area. His territory will include Washington, Oregon, and the northern part of Idaho.

Victor Hansen will take over the Southern West Coast Sales Zone, directing distributors in California, Arizona, and eastern Nevada.

The appointments of Mr. Wells and Mr. Hansen were made to fill vacancies left by Morrison C. Wright and James R. Williams who are taking over the northern California distributorship franchise for the sale of General Motors Series 71 Marine and Industrial diesel engines.

• Two G-M-diesel-powered American Hoist and Derrick diesel-electric locomotive cranes unload slag on the shore of Lake Michigan for the Inland Steel Company at Indiana Harbor, Indiana.

Caterpillar Tractor Company, Peoria 8, Illinois, announces the promotion of E. W. Ryder to the position of parts manager for the company's Eastern Division. Mr. Ryder is replacing C. D. Byrns who resigned as Eastern Division parts manager to join Arizona Machinery Company, "Caterpillar" distributor.

Air Reduction Sales Company, New York 17, N. Y., has opened a new acetylene plant in Dayton, Ohio, to meet the increased demand in the area for acetylene to be used in the oxyacetylene welding and cutting process.

Fairbanks, Morse & Company, Chicago 5, Illinois, announces the appointment of L. A. Weom as manager of the company's Pump Division. Mr. Weom is taking the place of Arnold Brown who has resigned.

DREDGES
HYDRAULIC
DIPPER
CLAMSHELL
Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!
AMERICAN STEEL DREDGE CO. INC.
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DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

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WON'T QUIT OR CAUSE TIME OUT
A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
THE HAYWARD CO.
52-54 Church Street
New York, N. Y.
BUCKETS

Gar Wood Industries, Incorporated, Wayne, Michigan, has named E. D. Wallace sales manager of its Buckeye Traction Ditcher Division at Findlay, Ohio. W. C. Peterson has been appointed service manager of the same division; W. E. Dawson and W. R. Steenrod, formerly district representatives for Buckeye, have been appointed district managers-general line for the Company. Mr. Dawson will have the West Coast Territory, and Mr. Steenrod will center his activities in Milwaukee.

Goodyear Tire & Rubber Company, Akron, Ohio, announces the promotion of R. E. Pauley, District Manager in Pittsburgh, Pa., to the position of Sales Manager for the company's molded goods plant at St. Mary's, Ohio. He will be succeeded in Pittsburgh by Robert B. Warren, who has been Eastern Railroad Sales Manager for Goodyear in New York City.

Eastern Car & Construction Company, Easton, Pa., has appointed George D. Fraunfelder, formerly the Company's Chief Sales Engineer, to the newly created office of Director of Engineering and Research. Mr. Fraunfelder will devote his efforts to further advancement of designs for heavy-duty pneumatic-tired industrial haulage equipment and industrial cars.

R. H. Clark Equipment Company, Incorporated, Mulberry, Florida, formerly known as the Mulberry Supply Company, has announced the opening of its new sales and warehouse building. The plant, which is of steel and concrete block construction, contains approximately 12,000 feet of floor space. Executive offices and display rooms occupy the front of the building, while stock is housed in the rear portion and in an annex. Both stock rooms are equipped with overhead cranes to handle heavy equipment.

Manufacturers represented by the concern include Bucyrus-Erie Company; Morris Machine Works; Goodyear Tire & Rubber Company; Westinghouse Electric Corporation.

Alemite Division, Stewart-Warner Corporation, Chicago, Ill., announces the appointment of Gustave Treffeisen to the position of Sales Manager. Mr. Treffeisen is succeeding Charles I. Kraus, who will become Alemite distributor in the Minneapolis territory.

American Tractor Equipment Corporation, Oakland, California, announces the appointment of Howard-Cooper Corporation as distributor in Oregon and western Washington for ATECO two-wheel and four-wheel scrapers. ATECO sales and service will be available through Howard-Cooper Corporation's headquarters in Portland and its branches at Seattle, Albany, Eugene, Roseburg, Central Point, and Klamath Falls.

Gardner-Denver Company, Quincy, Ill., has sold its governor business to the Wiebmer Machine Shop of Quincy, Ill. Gardner-Denver will henceforth concentrate on its rock drills, air compressors, pumps, and other allied products.

Hercules Powder Company, Wilmington, Delaware, announces the appointment of John M. Martin, manager of the Pittsburgh office, to the position of assistant general manager of the Cellulose Products Department. This will make two assistant general managers for the Cellulose Products Department.

B. F. Goodrich Company, Akron, Ohio, announces the following appointments in the company's Truck and Bus Tire Sales Department: Howard F. Kidwell will be in charge of fleet sales, including national account sales and state business; Thomas I. Jenkins will be in charge of industrial tire sales.

American Steel Dredge Company, Incorporated, Wayne Crane Division, Fort Wayne, Indiana, has appointed Felix W. Sweeney assistant sales manager. Mr. Sweeney will conduct sales clinics in the western territories, while Don L. Douglass, Sales Manager, will cover eastern states.

R. G. LeTourneau, Incorporated, Peoria, Illinois, has made the following change in the corporation executive staff: Roy E. McClosky, formerly assistant treasurer, has been elected vice president in charge of sales. In his new position, Mr. McClosky will direct the company's sales divisions as well as other related departments.

Chicago Pneumatic Tool Company, New York 17, New York, announces the opening of a new branch office at 528 11th Street, Rock Island, Illinois.

The new office, under the jurisdiction of the Chicago District Office, will have J. C. Wisner and A. B. Rustrom in charge of sales and service.

Metal & Thermit Corporation, New York 5, New York, announces the appointment of O. L. Howland as sales manager of its Welding Division with headquarters at 7300 South Chicago Ave., Chicago, Illinois. As aide to Mr. Howland, William C. Cuntz has been made assistant sales manager of the Welding Division. His headquarters will be at 1514 West North Ave., Pittsburgh, Pennsylvania.

Drott Manufacturing Corporation, Milwaukee 12, Wisconsin, announces that Drott Twin-Controlled Tilting Bulldozers and Bullangledozers are now being sold and serviced by Oliver Cletrac dealers throughout the country.

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. . . for EVERYTHING and ANYTHING in a
HEAVY DUTY TRAILER
A complete range of service-proved types and capacities, available to meet your every general or unusual hauling requirement.
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ROGERS HEAVY DUTY Gooseneck Trailers
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trade literature

Title: **Heavy Machinery Bulletin**
Subject: Completely illustrated, this twelve-page bulletin describes and pictures lock and dam machinery, gate and valve lifts, bridge operating equipment, and other heavy operating equipment custom built to specifications.
Where to Get: Foote Brothers Gear and Machine Corporation, Chicago 9, Illinois (Free)

Title: **Nickel Welding Booklet**
Subject: A new sixteen-page booklet on the materials required for the metal-arc, oxy-acetylene and submerged melt welding of nickel and the high nickel alloys is now available. Besides describing the International Nickel Company's products, the booklet lists such general information as the types of welding rods to use, recommended amperages for electric-arc welding, and the proper flux to select for gas welding and brazing. Information also is included on technical books dealing with the welding of the high nickel alloys.
Where to Get: The International Nickel Company, New York 5, New York (Free)

Title: **Slurry Pump Bulletin**
Subject: Sixteen-page illustrated bulletin describes the Pettibone Mulliken Corporation's new slurry pump whose parts are centrifugally cast of abrasion resistant Diamond alloy. Complete, detailed description, engineering and pumping data, selection chart, dimensions, assembly drawings, and parts list are included. The bulletin demonstrates in general the mechanical features of the pump and the characteristics of Diamond alloy.
Where to Get: Pettibone Mulliken Corporation, Chicago 51, Illinois (Free)

Title: **"Compressed Air Handbook"**
Subject: This 400-page Handbook has been published to meet widespread demands for a reference text on applications, installation, operation, and maintenance of air compressing equipment and air-powered tools of all types. In addition to new material and data, the Handbook contains, in revised form, all of the standard reference material formerly published as "Trade Standards." Included are definitions, test standards, and numerous basic tables and formulae.

The Handbook represents the collective knowledge, experience and thought of the 19 member companies of the Compressed Air and Gas Institute, and was compiled over a two-year period as a joint activity of the Institute's educational and technical committees.
Where to Get: Compressed Air and Gas Institute, Cleveland, Ohio (Price $3.00)

Title: **"Keeping Winter in its Place" Booklet**
Subject: This eight-page booklet shows the ways in which "Caterpillar" diesel motor graders and track-type tractors can be used for snow removal. It pictures the machines at work with V-type and one-way snow plows, snow wings, and tractor-mounted loaders, opening the way for ground and air transportation in both cities and rural communities.

The text emphasizes versatility, telling how the equipment used to power the clearing tools can also be used for building and maintaining roads, ditching, logging, and on various other jobs during the milder months.
Where to Get: Caterpillar Tractor Company, Peoria 8, Illinois. Ask for Form 10367 (Free)

Title: **"Kwik-Mix" Bulletin**
Subject: This illustrated four-page bulletin describes and pictures the Kwik-Mix 6-P Plaster-Mortar Mixer. It tells how the saw-tooth mixing blades on the machine function and how a six-foot batch can be discharged in seven seconds through the discharge door. Complete specifications and descriptions of engine, controls, and applications are included.
Where to Get: Kwik-Mix Company, Port Washington, Wisconsin (Free)

Title: **Marine and Industrial Hardware Booklet**
Subject: This newly revised 31-page catalog and data book presents detailed working characteristics of Laughlin wire rope and chain fittings, thus helps to remove "guesswork" in selecting the required fitting. It also includes tables and charts for reference use, and lists the new products which round out the regular Laughlin line.
Where to Get: Thomas Laughlin Company, Portland 6, Maine (Free)

"Okay! Take your pick."

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Every bite's a mouthful in this giant anthracite strip pit — because carefully planned shots have broken up the overburden so that it actually crumbles at the touch of a dipper. Good fragmentation keeps shovels working, trucks moving with *pay dirt* in every yard.

PRIMACORD plays an important part in this blasting technique. It detonates the explosive column of each charge, and connects all holes in the hookup — insuring maximum effectiveness of every load.

There are other reasons why Primacord is used by strippers everywhere. Primacord is insensitive to stray currents. The use of high voltage to operate equipment requires that the detonating agent be insensitive to stray currents. Primacord, detonated with fuse and cap, fills this need perfectly.

Primacord stands up under adverse conditions. The overburden is no feather bed! Sometimes it's knee-deep in mud and water — sometimes it's raining hard or freezing cold and snowing. Whatever the conditions, you will find that Primacord produces results.

There is a grade of Primacord to meet every condition. P-74

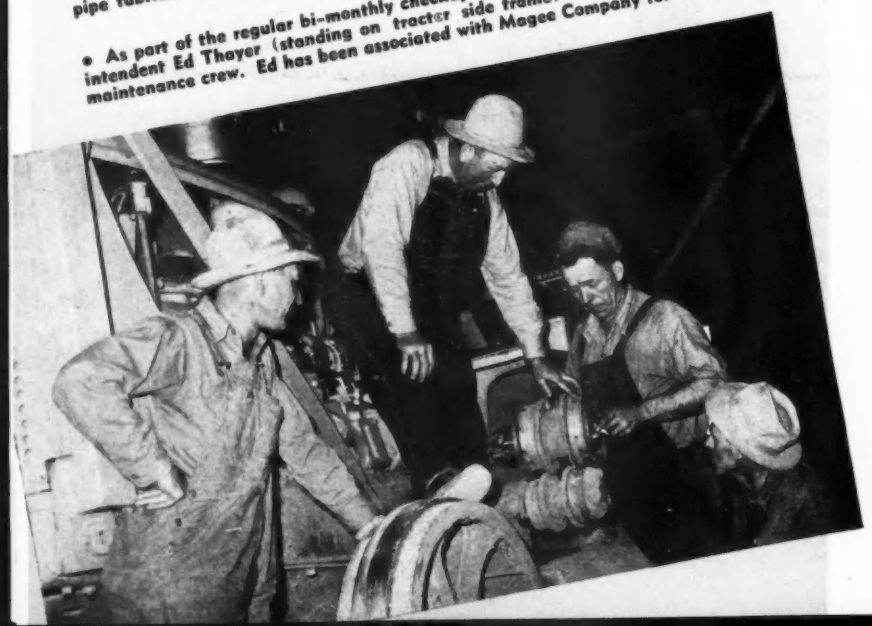
THE ENSIGN-BICKFORD CO., SIMSBURY, CONN.
Also **Ensign-Bickford** ***Safety*** **Fuse** • ***Since 1836***

(Continued from page 611)

• Caterpillar D-8 tractor and 80 (14-yd. struck) scraper haul dirt ½ mile to the septic tank fill. At right is the main line of the Minnesota Transfer Railway Company which services the station.

• Bucyrus-Erie ¾-yd. dragline and Caterpillar 12 patrol grader finish excavation for the manifold building and boiler house. Quonsett hut in background is the pipe fabricating shop.

• As part of the regular bi-monthly checkup for all equipment, Excavating Superintendent Ed Thayer (standing on tractor side frame) checks track roller with maintenance crew. Ed has been associated with Magee Company for 17 years.



ing the compressor close to the area being tamped.

Dikes, which have been built up and thoroughly compacted by the scrapers to enclose an area approximately 200 feet square for an 80-foot tank, are finished by the dragline, which climbs up on the dike and backing along it, dresses the cross-section to desired dimensions (four feet wide at top, 28 feet wide at bottom and six feet high) following stakes put down by the surveying crew. Working on top of the dikes, the dragline operator has excellent visibility and is able to produce a very uniform slope. As a final step, basins and dikes are covered with six inches of top soil and planted to grasses.

Trench With Scrapers

Most of the trenches for oil, water, sewer, and gasoline lines are excavated by the draglines. However, where the number of pipes to be put down in one trench warrants construction of a trench 10-ft. wide or wider, the work is done by scrapers.

Gasoline and oil lines vary from three to 14 inches in diameter and are buried a minimum of four feet. The water lines are six to eight inches in diameter, put down eight feet deep. Sewer lines are six to 12 inches in diameter, down five to seven feet deep. 1½ to 4-in. conduit lines go down 18 inches.

Since all tanks are designed to be drained by gravity, pipes are accurately blocked to grade before backfilling. After blocking, the lines are plugged and tested with air at 125 p.s.i. for an hour to discover any possible leaks. Tar is brushed on the pipes and they are then wrapped with tar paper as protection against corrosion.

Backfill Sand by Hand

In order to avoid disturbing the grade of the lines, men backfill and tamp around them by hand with sand to six inches above the top of the pipes, removing the temporary blocks as the material is tamped. Pit run sand of high quality for this work is obtained from borrow pits on the job, excavated by scrapers and loaded to trucks with draglines. To date, more than fifty thousand cu. yds. of sand have been used. The remainder of the trench excavation (which varies from four to eight

feet deep) is backfilled with clay by bulldozers.

Because of the necessity for completing this job as soon as possible to give Standard Oil a bulk outlet in the Minneapolis area, this work went forward full-tilt through the winter. In many cases where plans were changed, it was necessary to re-excavate for new lines through fills previously put down during freezing weather. Since this material was often frozen to ten or fifteen feet in depth, excavation was made extremely difficult. Magee found his three rippers, (two LeTourneau model K-30's and one model B) invaluable to prepare ground of this character for excavation.

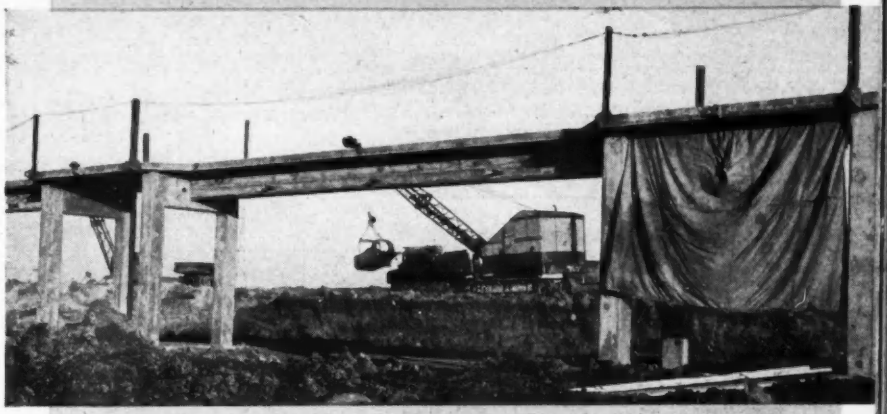
The wet weather of last fall and this spring seriously slowed all work in the project. Magee Company used crushed rock "by the carload" and still couldn't keep ahead of the drenching rains which made hauling roads almost impassable. The contractor found it necessary to use his bulldozers much of the time to pull transit-mix trucks out of trouble when they bogged down.

As part of his contract, Magee Company has built three pump houses, three loading docks, an office building, shop, a 4-story steel and concrete warehouse building, and 16 small tanks—12 ft. in diameter for storage of lubricating oil.

Others on Job

Magee's work includes all buildings, excavation, and structural iron and steel. The pipe work is being done by Ruben L. Anderson Company, St. Paul, and the electrical contractor is Commonwealth Electric Company, also of St. Paul. Another St. Paul contractor, Roe James Co. is installing all glass on the job. Painting is being handled by St. Paul's Mergens Company. Tanks are being erected by Chicago Bridge and Iron Company. The total number of men now employed on the job is about 400, of which 240 work for Magee—on one shift of eight hours, five days a week.

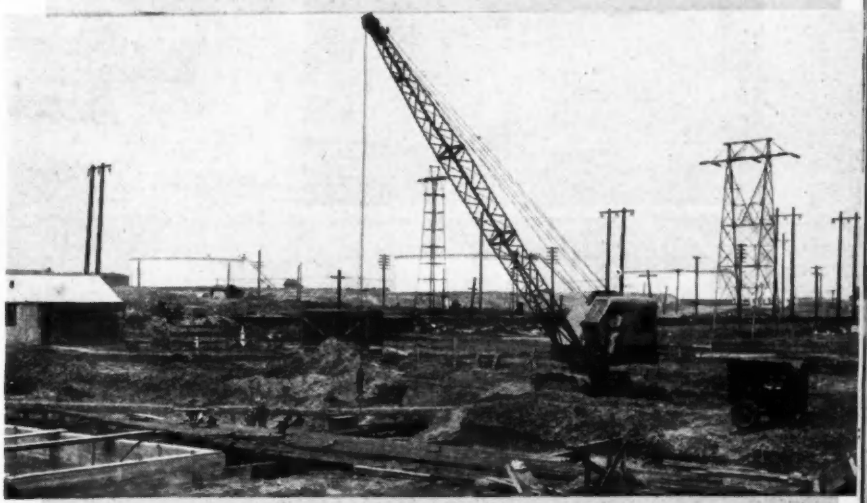
The exceptional care taken by Magee Company to keep all of its equipment in excellent shape is worth noting. An oiler, assigned to each dragline, is responsible for greasing of the unit before starting work in the morning and for another thorough lubrication job at noon. Tracks receive several greasings each day, depending on



• Behind the partially-completed 660-ft. long tank-car loading dock, Bucyrus-Erie and Lima (left) draglines load to Ford dump trucks with St. Paul hydraulic hoists and bodies.

• Excavating and grading for the station's main group of buildings are these Caterpillar D-8 tractors and LeTourneau 12-yd. (struck) scrapers.

• The Osgood crane sets 6 and 8-in. oil pipe near pump house No. 3. At right is the 300-amp. portable Hobart arc welder.



the amount of travel. Tractors are greased every day by operators and maintenance oilers. Oil is changed on all units every sixty hours of operation. All lubricants used on the job are of Standard Oil make.

Every item of machinery on the project is carefully checked every two weeks by two mechanics who work in a well-equipped maintenance shop located on the job. As a result of this examination, any worn parts are immediately replaced, with special attention being given to track parts.

In order to minimize down time, a fairly complete set of parts for the Caterpillar tractors is kept on hand and when worn parts are removed, they are immediately replaced by new parts or sent to the Wm. H. Ziegler Co., Inc., Minneapolis equipment distributor, for rebuilding.

For all welding work which can be done on the job, a Hobart 400-Amp. arc welder and a Lincoln 200 Amp. are available in the shop and a portable Hobart 300-Amp. rig is used for on-the-spot repairs.

Magee's previous experience with this type of project goes back to 1944 when the firm built a similar station with 200,000-bbl. capacity at Spring Valley, Iowa. The present job is expected to reach completion early next year.

Big-Time Performance At Small-Time Cost With Bucyrus-Erie Drilling & Fishing Tools

They are made from special extra-tough steels developed in our own metallurgical laboratories.

Master craftsmen, proud of a tradition of precision workmanship, fashion them with expert care.

75 years of experience in the field and many years of engineering research and study give Bucyrus-Erie the "know-how" to produce the best drilling and fishing tools on the market today.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

No Blastee

(Continued from page 614)

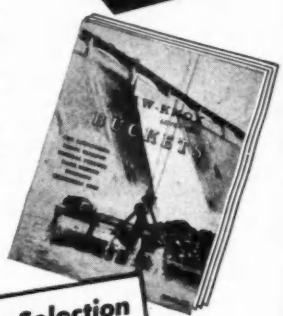
and no specific observations are in order thereon, since it was based upon the peculiar facts and circumstances involved.

However, this in no way detracts from its value as an illustration of the importance of clarity when rules for the classification of materials are being agreed upon.

• So ended the case with the appellant victorious.

YOU'LL FIND IT ON PAGE 20

Among general contractors, one of the most popular Blaw-Knox Buckets is No. 672, rated ¾ Cu. Yd. It's a general purpose two-line, lever arm type that digs like a mole. On page 20 of Catalog 2076, there's a photo of it at work, and on page 34 you will find a complete table of weight, measurements and other data you need. Of the more than 100 types and sizes of Blaw-Knox Buckets, this may be the one to speed your work. Write us for *Catalog No. 2076.*



BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2074 Farmers Bank Building
Pittsburgh 22, Pa.

Bucket Selection Made EASY
Catalog 2076

BLAW-KNOX CLAMSHELL BUCKETS

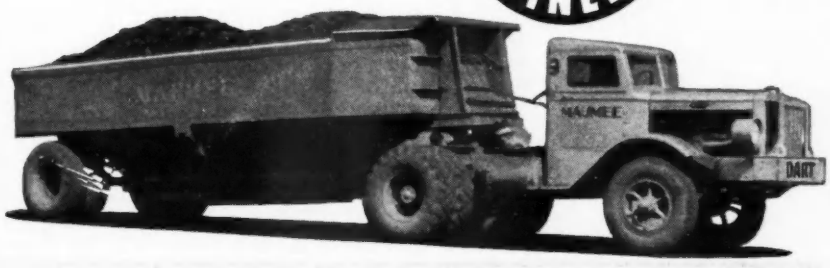
Where men and machines must work in unison for maximum output—misfits and delays are costly. Each man, each piece of machinery, each TRUCK is a vital part of any mine operation.

The right truck for your job, a TONNAGE ENGINEERED DART, is insurance against tie-ups at the loader, on the road, or at the hopper. The correct number of Trucks with just the right speed, power, capacity—these are the essentials of dependable, economical haulage.

THAT'S
"TONNAGE ENGINEERING BY DART"

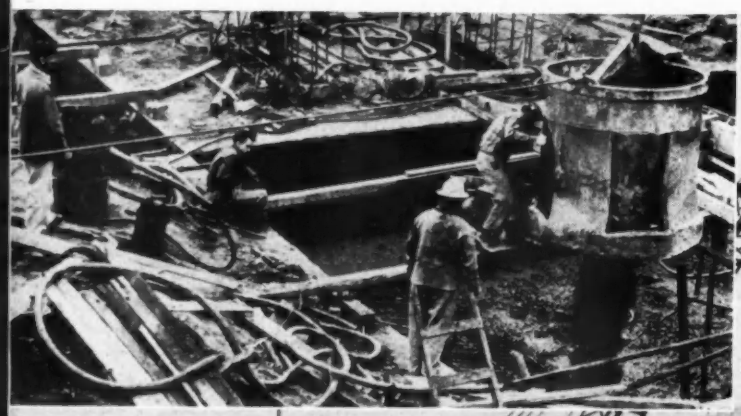
TONNAGE ENGINEERED

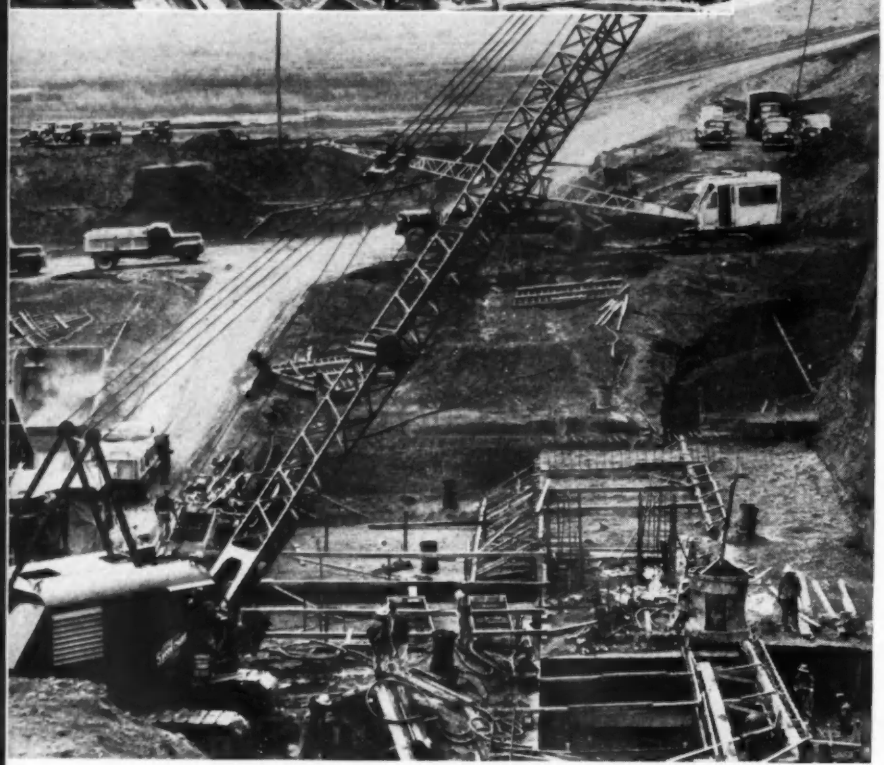
CONSULTATION WITH OUR ENGINEERS IS INVITED



DEPENDABLE PERFORMANCE SINCE 1938

Through grueling wartime demands—ON SCHEDULE—with many more economical miles ahead.





Canton Dam

(Continued from page 613)

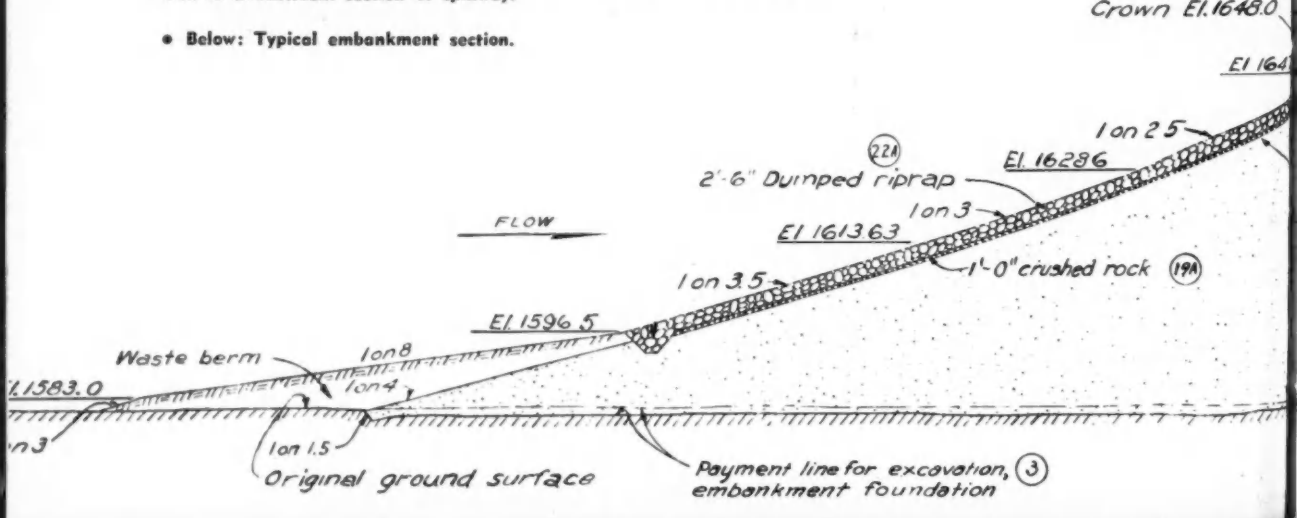
rolled earth-filled dikes, a concrete spillway and control works, and a service building including a water-treatment plant and standby generator unit. Four dikes, a portion of the embankment, and part of the excavation for the spillway were completed by T. L. James & Guilliams Brothers, Rustan, La., in 1943 on an earlier contract. Although tentative plans call for supply of water from the completed dam to a yet-to-be-built irrigation system, its main purpose is one of flood control.

The general geology of this region is sand overburden, and the bed rock is of red bed. Red bed drilling (average is six feet) is being done by two Worthington UMW 40 wagon drills, two Chicago Pneumatic 500's and one 3/5 Chicago Pneumatic compressor. The varying thickness of mica bands encountered and hardness of the red bed determined the pattern of drilling and shooting and no regular pattern was followed. About fifteen tons of 40% Hercules gel have been used in light shots for blasting. The air compressors also furnish air for concrete clean-up operations.

Unclassified Excavation

Unclassified excavation in the spillway area will amount to about 1,135,000 yards. Embankment foundation excavation for new sections, together with removal of topsoil, trees, brush,

- **Top: 1.4 yards of concrete shoot into the left stilling basin wall form.**
- **Above: Speedcrane 3500 places concrete bucket for pour at left stilling basin wall in downstream section of spillway.**
- **Below: Typical embankment section.**



vegetation and other unsatisfactory material and obstacles will account for another 80,000 yards.

Hand Removal

Classified in the contract as special excavation is the final 12 inches for the concrete spillway foundation. This material—about 19,000 yards—was removed by hand and special care was exercised to avoid disturbing the foundation material. Excavations for keyways, cutoff walls and for drainage trenches under the concrete slabs are included in this classification.

Borrow areas are all conveniently located to the fills, the farthest being only three-quarters of a mile away. Material specified for the lower two feet of the pervious fill section of the earth dam is 10% or less passing a 200 square mesh sieve and for the downstream toe drain, 2% or less passing the screen. There are about 650,000 yards of borrow excavation.

Other excavation includes 80,000 cu. yds. in stock piles, 30,000 yards for foundation protection, 500 yards of backfill for trenches, 4000 yards of topsoil, 1.1 million yards of impervious fill, 600,000 yards of pervious fill and 1000 yards of roadway fill.

Equipment in Use

Excavating equipment used at the site includes a 54-B Bucyrus-Erie 2½-yd. shovel, an 80-D Northwest 2½-yd. shovel, two 605 Koehring 1½-yd. draglines, one Euclid loader, 24 13-yd. Euclid bottom dump wagons and tractors, four Wooldridge 15-yd. Terracobras, a 2½-yd. Manitowoc Speedcrane 3500 dragline, and one K-360 Link-Belt 1½-yd. dragline. The 54-B and 80-D shovels average 185 cu. yds. per hour in the hard red bed. The Koehring and Link-Belt draglines handle 225 cu. yds. per hour (average) of sand in the borrow areas using 2-yd. Hendrix light-weight buckets. The Euclid loader averages 525 cu. yds. per hour in the sandy red bed material in the dam's approach channel.

Two lubrication trucks and one International 6x6 tank truck for diesel fuel service all equipment. Haul roads, of red bed and sand mixed, are maintained by a Caterpillar 12 patrol grader and an International 6x6 water truck. About 22,000 yards of material move over the hauling roads each day.

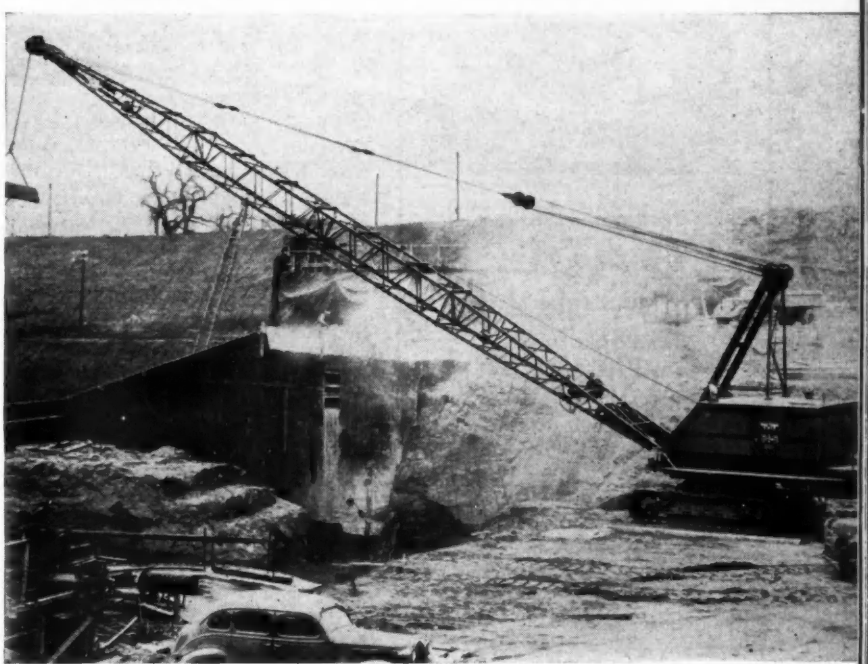
For compacting earth in the fill section, the contractors are using three 25-ton Gebhard sheepsfoot rollers, drawn by Caterpillar D-8 tractors. With roller bearing pressure at 685 lbs./sq. in., density is held to 100% Proctor.

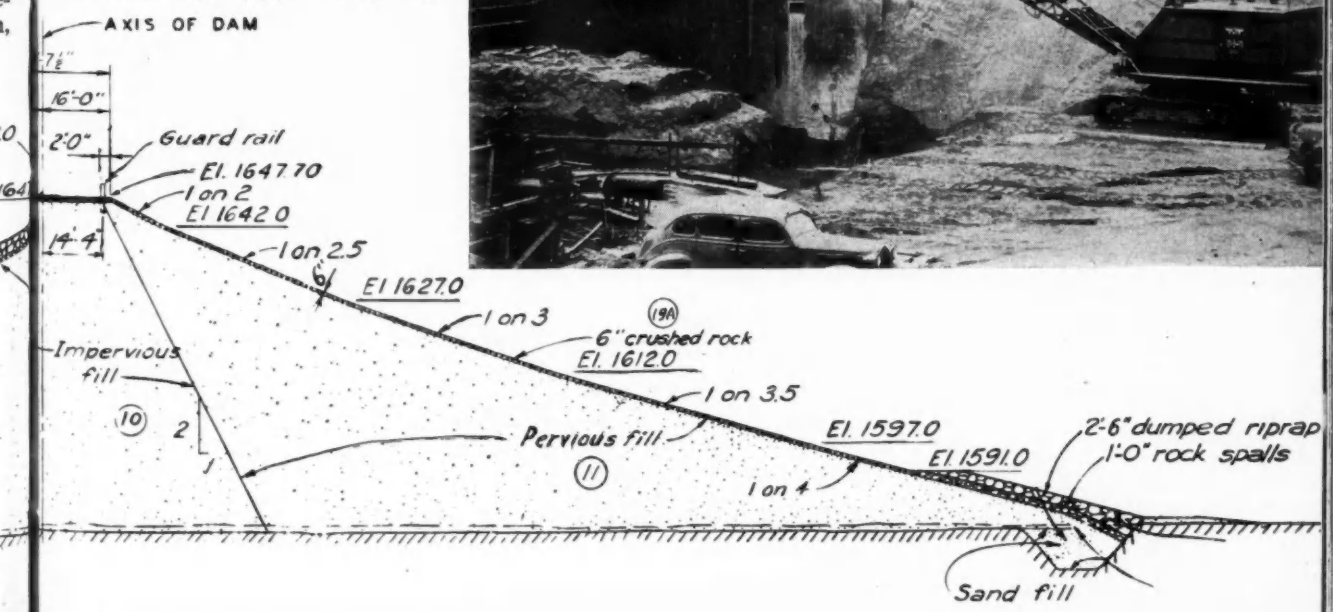
Concrete Mixers

Concrete is supplied from two 1.4-yd. mixers (a Ransom and a Rex) using Lone Star, Dewey, and O.K. Portland Cement. Concrete is hauled by seven Ford batch dump trucks, (each carrying two batches at a time) and placed by the cranes using Rex 2-yd. buckets. Water is pumped from the river by four Gorman Rupp 4-in centrifugal pumps powered by Caterpillar engines.

Officials of the C. F. Lytle

• At the spillway the Bucyrus-Erie 54-B handles material from the foundation excavation.





• 80-D Northwest 2½-yd. shovel loads to 13-yd. Euclid bottom-dump wagons pulled by Cummins-powered tractors in one of Canton Dam's borrow pits. The embankment where this material is placed is three quarters of a mile away over well-maintained mixed sand and red bed haul roads.

Front - End
LOADERS
For Industrial Tractors

Extensible Booms,
⅝-cu. yd., Bucket 8-foot lift,
Backfiller Blades

White Mfg. Co.
ELKHART INDIANA

Company are Francis Lytle, President, F. W. Parrott, Vice-President, and W. H. DeButts, Chief Engineer. W. D. Amis is Manager and R. T. Amis, Jr., and E. C. Amis are partners in the Amis Construction Company. Project Manager at Canton Dam for both concerns is George M. Stiers.

The entire project is under the direct supervision of the U. S. Engineers and Resident Engineer in Charge is Ross Wylie. J. D. Baker serves as Assistant Resident Engineer.

Sewage Plant

(Continued from page 609)

walls had been constructed. A Northwest #7 crane was used to place the forms.

All concrete for the project is dry-batched in a Blaw-Knox batching plant, erected on the western limits of the job site, and is trucked to pavers located at strategic points near the construction work. This plant has capacity to batch 2,200 cu. yds. of concrete in eight hours.

The cement supply is housed in three Blaw-Knox 300-barrel silos equipped with Link-Belt elevators. Sand and gravel are trucked from two Blaw-Knox 110-ton hoppers. Sand is heated to proper temperature in the hopper by a 40 hp. Scotch Marine boiler, while gravel is heated by a 75 hp. locomotive type boiler.

Both sand and gravel are brought in by rail on a specially laid spur line. A Bucyrus-Erie 22-B crane with 45 ft. boom and 1-yd. Owen clamshell bucket unloads the cars, dumping material to stockpiles adjacent to the hoppers.

A Bucyrus-Erie 33-B crane, the same unit used earlier in the pile driving operations, transfers sand from stockpile to hopper with a 1½-yd. Owen clamshell bucket. A Koehring 604 with 1½-yd. Owen clamshell bucket supplies the gravel hopper from the stockpile.

Concrete is mixed near the pouring points by four pavers: two Foote double drum 34-E's; one Ransome dual drum 34-E, and one Foote single drum 34-E. Rex concrete pumps take the mixed

OWEN
CLAMSHELL BUCKETS
INSURE A BIGGER DAY'S WORK
and A MOUTHFUL AT EVERY BITE
Exclusive features, expert design and superior construction characterize Owen buckets. Long life with dependable service has resulted wherever Owens have been put to work.
The latest catalog is now available. You'll doubtless want to look it over, keeping your current excavating, material handling and dredging equipment demands in mind. Write for the catalog TODAY.
The OWEN BUCKET Co.
6095 Breakwater Avenue Cleveland, Ohio
Branches: New York Philadelphia Chicago Berkeley, Cal.

concrete from two of the pavers, pumping it through 8" pipes to points of pouring. Watering of the concrete is handled by three Mack watering trucks, two of which carry 2000-gal. tanks while the third carries a 1500-gal. tank, and by water lines laid to the construction points.

Great pains have been taken, ever since the project's beginning, to keep all equipment in top operating condition, with maintenance and repair shops for both Boyle and Madden equipment established at a site near the batching plant.

At the peak of operations, nearly 400 men were employed on the project. Of these, 300 were Boyle employees, 50 were Madden men, and an additional 30 men were employees of L. H. Prentice Co., Chicago, to whom the piping work was subcontracted.

In charge of operations on the project for M. J. Boyle and Co. is C. L. Sogge, General Superintendent, who has supervised numerous other M. J. Boyle projects — notably the construction work on Patterson field, Dayton. Ohio, and Truax field, Madison, Wis. E. H. Bolton is Chief Engineer. In charge of Boyle equipment is Ray Brinlee, Master Mechanic. Superintendent of dirt moving is G. A. Goodwin of the Thomas M. Madden Co.

For the Chicago Sanitary District, W. H. Trinkaus is Chief Engineer. L.B. Barker is Engineer of Construction. H. J. Bartz, Senior Civil Engineer, is supervising the work at the project site. He is assisted by W. C. Burdick, Ass't. Civil Engineer.

EQUIPMENT IN USE AT STICKNEY

M. J. Boyle & Co.

EXCAVATORS, CRANES, PILE DRIVERS

1—Barber-Greene ditcher
1—Bucyrus-Erie 15-B crane with 40 ft. boom, ½-yd. clamshell, and ½-yd. dragshovel attachment.
2—Bucyrus-Erie 22-B cranes with 45 ft. booms, ¾-yd. clamshells, and ¾-yd. dragshovel attachments.
2—Bucyrus-Erie 22-B cranes with 50 ft. boom, ¾-yd. clamshell, and ¾-yd. dragshovel attachment.
2—Bucyrus-Erie 33-B cranes with 55 ft. boom and 1½ yd. clamshell.
1—Bucyrus-Erie 38-B crane with 80 ft. boom.
1—Koehring 604 crane with 1½-yd. clamshell.
1—McKiernan-Terry 9-B pile driver.
1—McKiernan-Terry 7-B pile driver.
1—McKiernan-Terry pile extractor.
1—1000 hp. locomotive boiler for pile drivers.

PAVING EQUIPMENT

2—Foote 34-E dual drum pavers.
1—Foote 34-E single drum paver.
1—Ransome 34-E dual drum paver.
2—Rex Pumpcrete 200 concrete pumps.
8—1½ ton Ford dump trucks with 5-yd. GarWood bodies.
6—1½-ton Ford dump trucks with 5-yd. Marion truck bodies.
2—Mack 2000 gal. tank trucks.
1—Mack 2500 gal. tank truck.

PUMPS

1—6" C. H. & E. pump.
1—Jaeger 3" pump.
1—Jaeger 4" pump.
12—Jaeger 2" pump.
1—6" Rex pump.

COMPRESSORS ETC.

2—Ingersoll-Rand 315 cfm. compressors.
1—Ingersoll-Rand 85 cfm. compressor.
6—Ingersoll-Rand 2" air pumps.
1—Sullivan 500 cfm. compressor.
1—Sullivan 160 cfm. compressor.

BULLDOZERS

1—Caterpillar D7 tractor with Le Tourneau bulldozer.
1—Caterpillar D7 tractor with Caterpillar bulldozer.

LIGHT PLANTS

6—Kohler 1½-kw. light plants.

BATCH PLANT EQUIPMENT

1—Blaw-Knox batch plant with capacity to produce 2,200 yds. of dry batched concrete in 8 hrs.
3—Blaw-Knox 300 bbl. cement silos with Link-Belt elevators.
1—Butler Bin 100-ton sand hopper.
1—Butler Bin 100-ton gravel hopper.
1—140 hp. Scotch marine boiler for heating sand.
1—75 hp. locomotive boiler for heating gravel.

TRUCKS

2—Chevrolet ½-ton pickups.
2—Ford ½-ton pickups.
1—International K-11 with 16 ft. boom.
1—White WA-20 flat bed truck with 11 ft. boom.

Thomas M. Madden Co.

EXCAVATING AND GRADING EQUIPMENT

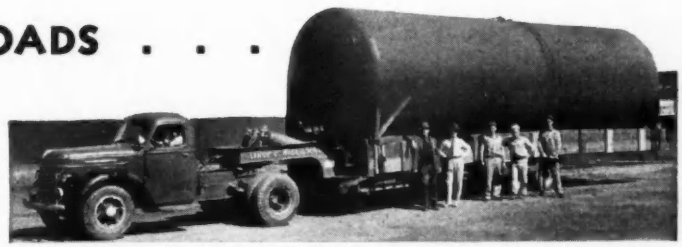
1—Bay City ⅜-yd. clamshell and dragline.
1—Bucyrus-Erie ½-yd. clamshell.
1—Bucyrus-Erie ½-yd. dragshovel.
1—Koehring 1½-yd. dragline and crane.
1—Lorain 1¼-yd. dragshovel.
1—Manitowoc 1¼-yd. shovel.
1—Manitowoc 1¼-yd. clamshell.
1—Manitowoc 1½-yd. dragline.
1—Manitowoc 2-yd. dragline.
1—Northwest 1¾-yd. dragshovel and dragline.
3—Athey 10 cu. yd. (struck) crawler wagons.
5—Caterpillar D4 tractors with Trackson loaders.
6—Caterpillar D7 tractors with Trackson loaders.
6—Caterpillar D8 tractors.
2—Caterpillar D7 tractors with Le Tourneau bulldozers.
1—Caterpillar D7 tractor with Caterpillar bulldozer.
1—Caterpillar D8 tractor with pusher attachment.
6—Caterpillar #60 tractors.
1—Caterpillar D8 tractor with snatch-bar attachment.
10—Le Tourneau Tournapulls.
6—Le Tourneau 12 yd. (struck) scrapers (drawn by D8 tractors).
5—Le Tourneau 12 yd. (struck) scrapers (drawn by Tournapulls).
5—Le Tourneau 10 yd. (struck) wagons (drawn by Tournapulls).
1—Caterpillar #10 road patrol.
1—Caterpillar #11 road patrol.
1—Caterpillar #12 road patrol.

TRUCKS

10—International K-11 four wheel trucks with 7 yd. Anthony truck bodies.
10—International K-11 six wheel trucks with 10-yd. Anthony truck bodies.
Varying numbers of Ford and Mack dump trucks also used.

SAFE FOR UNUSUAL LOADS . . .

It takes a sturdy, well designed and properly constructed trailer to safely transport unusual and unbalanced loads.



Heavy duty trailers from 5 to 100 tons with any wheel or axle combination.

JAHN TRAILERS — The ALL OVER WORLD!

Heavy hauling is ALWAYS SAFE with a JAHN TRAILER.

C. R. JAHN COMPANY
Dept. 1349
1106 W. 35th ST. CHICAGO 9, ILL.

NOT in the *Contract*

Sales Girl: "This perfume comes in three different strengths — No. 1, 'Fragrance of a First Kiss.' No. 2, 'Wedding in June.'"

Shovel Runner: "What's the No. 3?"

Girl: "One Man's Family."

Engineer: (as they dined in a private room at a roadhouse): "Er—er—how about a little demitasse now, my dear?"

Curvaceous Creature: "I knew it! You weren't treating me like this for nothing."

Wife (to contractor-hubby): "I saw the sweetest, cleverest hat down town today."

Contractor (in resigned tone of voice): "Well, put it on and let's see how you look in it."

The ladies met on a train. "I'm from Boston," haughtily remarked one. "There—breeding is everything."

"Well, I'm from St. Louis," said the other. "We like it there too, but it's not everything!"

"Pat, you'll ruin your stomach drinking that vile stuff!"

Pat: "Nivver mind, nivver mind. It won't show with me pants on."

The nudists were planning a costume party and the ladies were worrying about what to wear.

"Well," said one, "with my varicose veins, I think I'll go as a road map."

Stewardesses on western air lines planes making regular flights to Wyoming's Grand Teton mountain region were embarrassed by passengers who wanted to know what "Grand Tetons" means in English. Airline officials instructed the girls to tell inquirers that the name can be translated "Sweater Girl Mountains."

Lady Godiva, we are told, was the greatest gambler in the world —she put her all on a horse. She didn't win, however — but she showed!

"I was supposed to meet a stripping contractor here. Are you him?"

A house-to-house salesman rang the bell of a cheap-looking house. As the door opened he tossed in a carefully prepared mudball which disintegrated and made a mess on the front room rug. "Now, don't get excited lady," he said calmly. "I am demonstrating the Super Duper electric vacuum-cleaner. If this little wonder doesn't remove every trace of dirt on your rug, I'll eat the whole mudball!"

The indignant housewife left for the kitchen, returning in a few moments bearing a tray containing a bottle of ketchup, a jar of mustard, salt, pepper—and a rolling pin. She deposited the condiments with elaborate care, then picked up the rolling pin and hefted it expertly.

"But, madam," exclaimed the startled salesman, "I don't understand."

"Start eating!" commanded the housewife. "We ain't got no electricity!"

A real project engineer is a man who can hand back a letter for a third typing to a red-headed secretary.

A customs officer, while examining a cat skinner's baggage, discovered a bottle of whiskey. "I thought you told me there were only night clothes in that suitcase?"

"Right," replied the skinner. "that's my night cap."

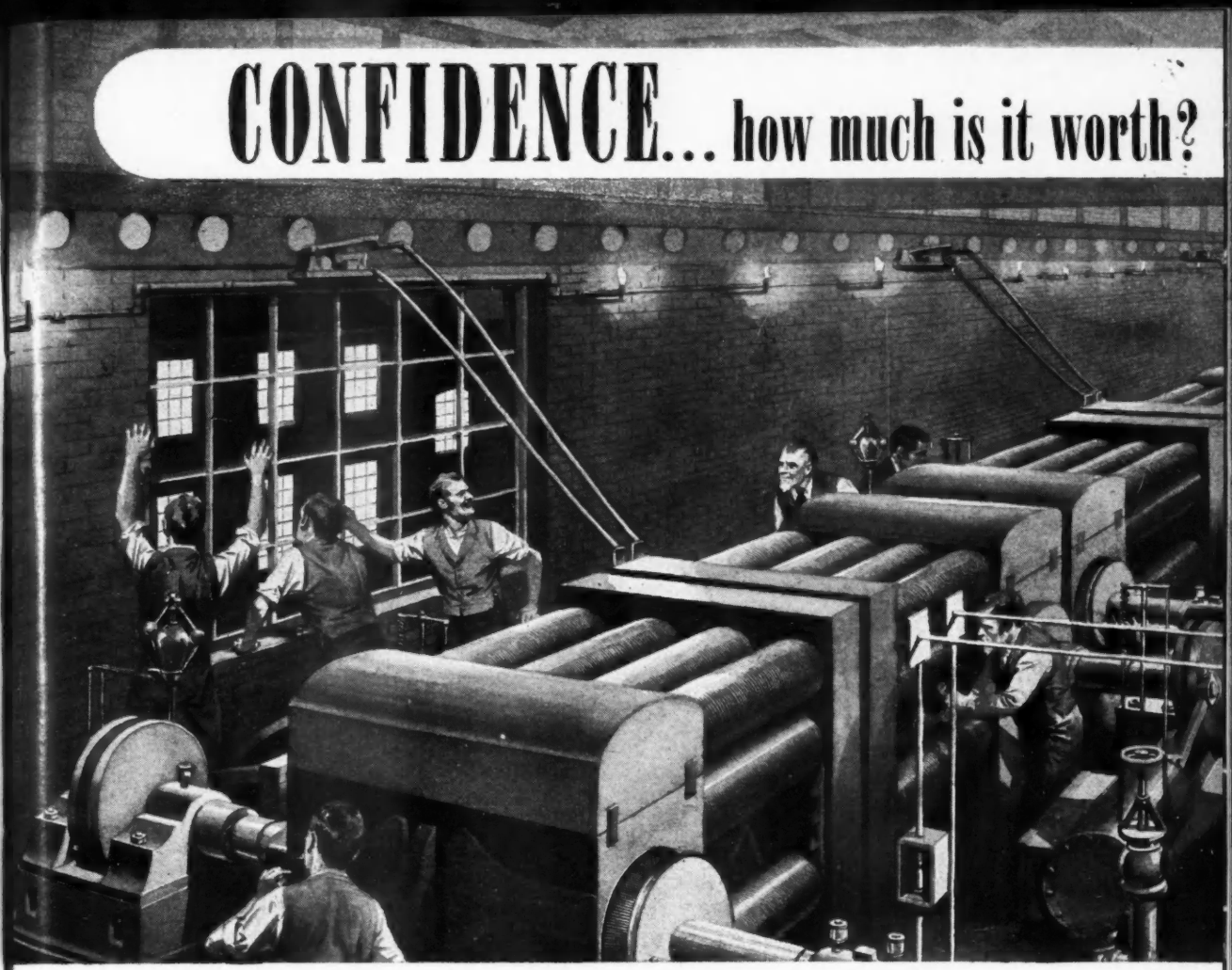
A young engineer, convinced that the age of chiselry was very much alive, had occasion to put his theory to a test.

With his family he was about to vacation at his cottage on the lake. But one thought plagued him. So many friends and relatives had visited his shore home in previous summers that his small budget had snapped and rest was impossible. With this in mind he wired thirty people who had been his guests:

"Am strapped for money. Need $500 badly. Please forward same immediately."

In all, he harvested 30 new and sparkling alibis which he read with relish while enjoying his first vacation in years.

CONFIDENCE... how much is it worth?



IN 1880, when electric lights first were tried on New York's Broadway, Roebling's confidence in the future of electricity motivated a new Roebling undertaking . . . the manufacture of electrical wire and cable.

Roebling's contribution to this great industry during the past sixty-seven years is a matter of record. Its leadership was attained and is being maintained by rigid high standards of quality . . . tireless development of superior products, better processes, and more efficient methods.

Your confidence in Roebling is valued by every Roebling employee. His income depends upon his ability to preserve that confidence. Every Roebling employee knows that you will continue to prefer the output of his hands only if he produces better products and gives you better service. Your confidence in Roebling is Roebling's best salesman.

This applies, not only to electrical wire and cable, but to all Roebling products.

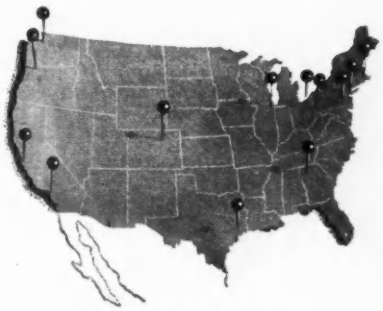
WIRE ROPE . . . ONE OF THE FIRST

Wire rope, the first product manufactured by Roebling, plays an important part in every industry. Its economical use depends upon its proper application, and hundreds of men in your industry have found a cooperative and helpful friend to lend a hand when they were puzzled with wire rope problems. He is their Roebling Field Man.

They find that he really knows wire rope and its applications, yet never hesitates to call on the Roebling Engineers and the Roebling Development and Testing Laboratory.

We, here in Trenton, are constantly being reminded by grateful customers of the ability and integrity of their Roebling Field Man . . . of his honest and successful efforts to prove that the words "Confidence" and "Roebling" are one and the same.

At the right is a listing through which your nearest Roebling Field Man can be contacted. Why not call or write him today? Make an appointment to meet a friend who can save you both time and money on your wire rope installations.



Atlanta	934 Avon Avenue . . Raymond 2151
Boston	51 Sleeper Street . . . Lib. 4373
Chicago	5525 W. Roosevelt Rd. . . . Crawford 6400
Cleveland	701 St. Clair Ave., N.E. . . . L.D. 249 & Main 5030
Denver	1635 Seventeenth St. . . . East 2684 & Keystone 4111
Houston	6216 Navigation Blvd. . . . Woodcrest 6-8316
Los Angeles	216 S. Alameda St. . . . Trinity 1261
New York	19 Rector Street . . Wh. 3-5200
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(Continued from page 662)

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2 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings, grooved for ⅝" rope. Groove diameter 12¼" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 234 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10½" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

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